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ABSTRACT

The purpose of this updated bulletin is to assist those interested in the planning process for elementary and secondary educational facilities. It contains input from educators at all levels, as well as from directors and supervisors of school plant planning and operations, specialists in educational programs, and architects and professional engineers. All space designations, areas, and dimensions are intended only as guidelines. The bulletin deals with needs assessments, preliminary planning, planning and contracting, site selection and acquisition, building characteristics, types of construction, fenestration, insurance, construction standards and life safety codes, service systems, instructional space requirements, and space requirements of common-use areas. An appendix contains the legal procedure for issuing school building and equipment bonds. A bibliography and a glossary of construction industry terms are also included. (Author/IRT)

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PLANNING BETTER SCHOOLS FOR LOUISIANA

BULLETIN NO. 711

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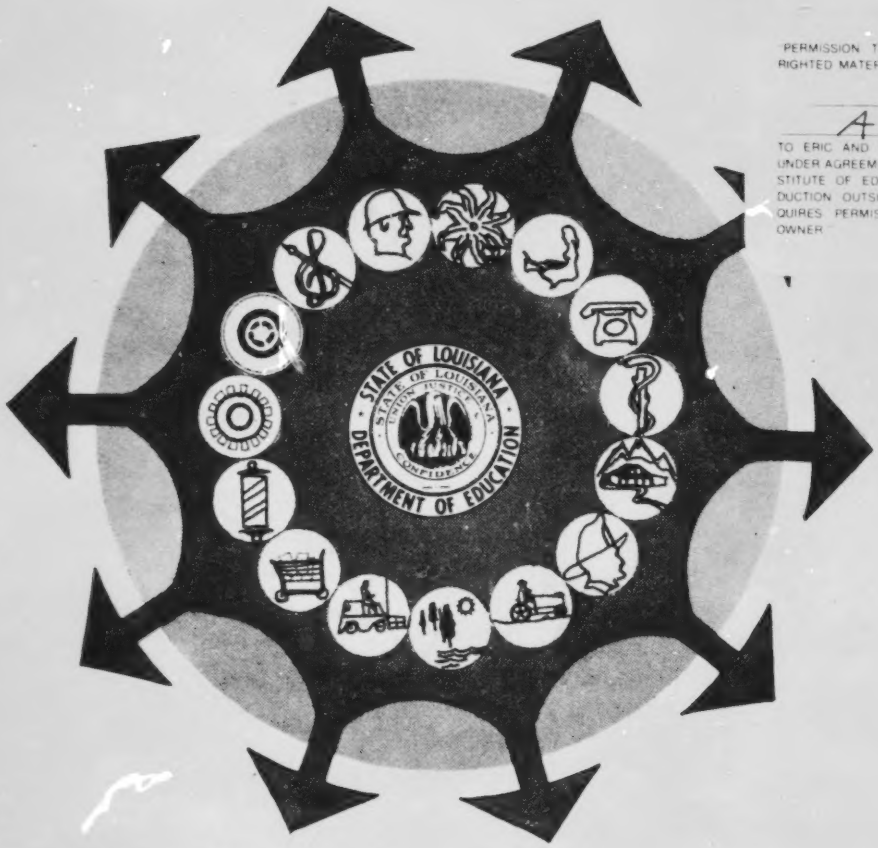

LOUISIANA STATE DEPARTMENT OF EDUCATION

LOUIS J. MICHOT

STATE SUPERINTENDENT

APRIL - 1975

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STATE DEPARTMENT OF EDUCATION
OF LOUISIANA

1975

BULLETIN NO. 711

PLANNING BETTER SCHOOLS FOR LOUISIANA

Prepared under the direction of
Mr. John R. Goller, P.E., Bureau Director
and the Staff of the
Bureau of School and College Plants
Division of Management, Research and Finance

Issued by
STATE DEPARTMENT OF PUBLIC EDUCATION
Louis J. Michot, Superintendent

FOREWORD

All of us in education are aware of the constant changes experienced in our public and nonpublic schools in teaching methods and programs. There is, however, another cycle of change equally important that affects our school systems and that few of us recognize. This is the planning process which is an important and necessary part of providing the physical facilities, the setting, and the environment for educating our students.

The construction, alteration, and renovation of school buildings and facilities, and the planning and financing are of prime importance and concern to administrators and local school districts.

Bulletin No. 711 is appropriately titled PLANNING BETTER SCHOOLS FOR LOUISIANA, and is intended to give guidelines and direction to those interested in or involved with school facility planning. The bulletin will be a source of information and will assist the reader in achieving an awareness of what is necessary for school buildings to be safe for occupancy, substantial in structure, and functional and attractive to the community.

The future of education in our State will depend to a great extent upon how well we plan and construct our schools.

Louis J. Michot
STATE SUPERINTENDENT OF EDUCATION

PREFACE

This publication was originally intended to be a revision of Bulletin No. 711 issued in 1964 titled THE PLANNING AND CONSTRUCTION OF LOUISIANA SCHOOL BUILDINGS. A preliminary review revealed that after ten years the bulletin was badly outdated and that a complete new rewrite was necessary. This has been done in both content and format.

New materials, methods of construction, and cost escalation constantly influence the architects and engineers who design our school plants, the educators who must use them, and the local school boards who must finance them. Also, regulatory agencies and State law enact life safety changes in building requirements. All these factors combine to limit the useful life of a school facility planning guide such as this one. For this reason we have not presented any present day construction cost data; also this is not a text on school equipment requirements. It is recommended that periodic reviews be made of the several chapters and that the bulletin be revised in five years or less.

The purpose of the new Bulletin No. 711, which has been retitled PLANNING BETTER SCHOOLS FOR LOUISIANA, is to assist those interested in the planning process for elementary and secondary educational facilities. It contains an input from educators at all levels, directors and supervisors of school plant planning and operations, specialists in educational programs, and architects and professional engineers.

All space designations, areas, and dimensions are intended as guidelines. Our recommendations are based upon current research and desirable practices in accordance with current curriculum trends and teaching techniques. We have stressed compliance with the regulatory requirements of the State Fire Marshal and the State Board of Health.

John R. Goller

John R. Goller, P.E.
Director of State School and
College Plants Bureau

ACKNOWLEDGMENTS

Due to depletion of supply and obsolescence of contents, an urgent need existed for the Louisiana State Department of Education to reissue Bulletin No. 711. The Bureau of School and College Plants was assigned to this task by Mr. Gordain A. Sibille, Executive Director of Operations, Management, Research and Finance, and a committee with expertise in school planning, construction, and operation was selected as follows:

Mr. Roy C. Kuyrkendall, Jr.
Architect-Engineer
Director of Construction
East Baton Rouge Parish School Board

Dr. Barney L. Kyzar, Director
School Planning Laboratory
Northwestern State University

Dr. Richard A. Musemeche
College of Education
Louisiana State University

Mr. Winfred Sibille
Supervisor of Instruction
St. Landry Parish School Board

Also we enlisted the assistance of specialists in the State Department of Education as follows:

Mr. Nolan J. Sahuc - Music Department
Mr. John O. Murphy, Jr. - Industrial Arts
Mr. John Livingston - Special Education
Dr. Tom Clausen - Special Education
Dr. Delmon McNabb - Health & Physical Education
Mrs. Nell Brouillette - School Food Services
Mr. H. E. Ruppert - Distributive Education
Mrs. Myrtle Kerr - Art
Dr. James Cookston - Library

These professionals made valued contributions to this publication much appreciated by Bureau of School and College Plants' personnel: Mr. George A. Bridgers, Mr. Bennie T. Gastmyer, and Mrs. Billie A. David, who researched, wrote, typed, and collated this bulletin.

We are especially grateful to Mr. Fred L. Chevalier, Special Counsel, Department of Justice, State of Louisiana, for preparation of Appendix "A". Our thanks also to The American Institute of Architects for permission to reprint the Glossary and to Carrier Corp. for their descriptive literature on climate control.

Most useful for our research were the school planning guides issued by the State Department of Education listed in the Bibliography; also the publications of the Council of Educational Facility Planners. From these references we borrowed the best, all with the intent to better serve and benefit our students and educators in Louisiana. Permission is hereby given to reproduce any part, or parts, of this publication.

John R. Goller

John R. Goller, P.E.
Director of State School and
College Plants Bureau

PHILOSOPHY AND GOALS

The development of facilities designed to utilize quality programs of education remains as one of the crucial tasks facing Louisiana schools. The realization of this important objective requires comprehensive planning that can be translated into functionally designed spaces for teaching and learning.

In the educational process the staff and students are encompassed in the learning environment. The question is not only whether learning will take place, but to what degree teachers will be able to teach to the best of their full potential.

The space for learning becomes the variable that will determine, to a large extent, the success or failure of the process. When the confines of the building limit the program, stagnation may well result.

TABLE OF CONTENTS

Item	Page
FOREWORD	i
PREFACE	ii
ACKNOWLEDGMENTS	iii
PHILOSOPHY AND GOALS	v

CHAPTER ONE

A.	THE PRELIMINARY SURVEY	1
	1. Assessing Educational Needs	1
	2. Determining Financial Ability to Fund Program	2
	3. Properly Utilizing the School Survey	3
B.	PRELIMINARY PLANNING OF PROPOSED FACILITY	4
	1. Selection of Architect	4
	2. When to Employ Architect	4
	3. Architect's Contractural Agreements and Services	5
	4. Duties of Architect	6
	5. Shortage of Budget Finances	7
	6. Keeping the Public Informed	8
C.	PLANNING AND CONTRACTING	9
	1. Preliminary Planning	9
	2. Working Drawings	10
	3. Approval by Local and State Agencies	11
	4. Advertising for Bids	11
	5. Proposal Form for Bids	12
	6. Opening of Bids and Awarding of Contract	12

CHAPTER TWO

A.	SITE SELECTION AND ACQUISITION	14
	1. Location	14
	2. Shape and Physical Characteristics	15
	3. Suggested Minimum Site Sizes	16

Item		Page
4.	Site Utilization	17
5.	Walks, Drives, and Parking Spaces	17
6.	Physical Activity Areas	18
7.	Miscellaneous Site Needs	18
8.	Other Site Considerations	19
9.	Basic Data Needs	19
10.	Landscaping	20

CHAPTER THREE

A.	THE BUILDING AND ITS CHARACTERISTICS	21
1.	Architectural Character and Design	21
B.	TYPES OF CONSTRUCTION	22
1.	Non-Fireproof Building	22
2.	Semi-Fireproof Building	23
3.	Fireproof Structure	23
4.	Single and Multi-Story Schools	23
C.	FENESTRATION	24
D.	GENERAL INSURANCE INFORMATION	25

CHAPTER FOUR

A.	CONSTRUCTION STANDARDS AND LIFE SAFETY CODES	28
1.	School Administrators' Responsibilities are Major	28
2.	Doors	28
3.	Vertical Openings - General	30
4.	Interior Corridor Requirements	30
5.	Windows for Emergency Rescue or Ventilation	31
6.	Fire Alarm Systems and Fire Drills	32
7.	Fire Extinguishers	33
B.	SERVICE SYSTEMS	35
1.	Water Supply	35
2.	Emergency Water Needs	35
3.	Waste Disposal	35

Item Page

4. Garbage and Rubbish Disposal 36
5. Sewage Disposal 37
6. Plumbing Fixtures 38
7. Electrical Installations 41
8. Gas Piping Installations 44
9. Fuels for School Heating 44
10. Fuel Storage 47
11. Mechanical Equipment Rooms 47
12. Hot Water Heaters 47
13. Exit and Emergency Lighting 48
14. Fumes Exhaust 48
15. Storage of Combustible Materials 48
16. Safety Glazing Installations 49

CHAPTER FIVE

A. SPACE REQUIREMENTS - INSTRUCTIONAL 50
1. Classrooms in General 50
2. Kindergarten 50
3. Elementary Classrooms 50
4. Open Plan 51
5. Secondary Classrooms 52
6. Art Center 52
7. Business Education 53
8. Distributive Education 54
9. Home Economics 59
10. Industrial Arts 62
11. Music Department 64
12. Science 68
13. Special Education 72

B. AREAS FOR USE OF ALL STUDENTS 77
1. Auditorium 77
2. Gymnasium 81
3. Library and Media Center 88
4. School Food Services 93
5. School Guidance and Counseling 103
6. Administrative Facilities 109

APPENDIX "A" - LEGAL PROCEDURE FOR ISSUING SCHOOL BUILDING AND EQUIPMENT BONDS 113
BIBLIOGRAPHY 124
GLOSSARY 129

CHAPTER ONE

A. THE PRELIMINARY SURVEY

The continuing evaluation of the needs of the school district is one of the important keys to the development and maintenance of quality instructional programs. It is imperative if full value is to be received from the educational dollar. The assessment of these needs is best accomplished by the development of a process for the collection, analysis, and interpretation of basic data relative to the organization, administration, and operation of the school system. This type of procedure will permit sound decisions affecting immediate problems and make possible effective long-range planning.

1. Assessing Educational Needs

The Comprehensive School Survey is a recognized process for collection and interpretation of relevant data, and the projection of recommendations for further action. It represents an application of research methodology with the addition of value judgments. The various facets of the survey are designed to gather data pertinent to the successful operation of the system. This data is necessary in planning to meet the unique needs of children in school.

These components are:

a. Community Characteristics: This section is concerned with the occupations, incomes, and educational levels of members of the community, together with migration patterns.

b. Pupil Population: The purpose of this phase of the study is to determine the number of pupils to be educated and to estimate future pupil population trends.

c. Instructional Program: This phase examines the philosophy guiding the curriculum offered in the schools. It concerns both the quantity and quality of the program.

2. Determining Financial Ability to Fund Program

In determining the financial ability of a school district to remodel or construct new facilities, the following factors should be considered:

a. Assessed valuation of taxable property in the district.

b. Present bonded indebtedness.

c. Building taxes presently in force.

d. Bonds, other than school bonds, outstanding.

e. Schedule of bond payments.

f. Percentage of property subject to homestead exemption.

g. Extent of industrial development in district.

In order to determine the maximum bond issue possible, it is necessary to know the total property assessment and the amount of school bonds outstanding. The total of all school bonds issued within a school district or parish cannot exceed the legally prescribed limitation of the total assessed valuation of taxable property within the district or parish.

Some districts will find that revenues available for financing needed building programs are insufficient even with the maximum bond issue possible. Formulating a parishwide bond district in lieu of several smaller districts might serve to alleviate this condition as well as to better equalize educational facilities within the parish.

h. Personnel: Personnel data which can be used in planning is gathered. This will include teaching experience, educational level, age, salary, marital status, etc.

i. Finance and Business Management: This area is concerned with the sources and expenditures of school funds and the management practices of the district.

j. Transportation: This concerns the length of bus routes, the size of buses, and the general policies governing the transportation system.

k. Organization and Administration: This includes the kind and number of schools and their locations.

l. School Site and Facilities: This area is concerned with the location and condition of existing schools and the determination of future needs.

3. Properly Utilizing the School Survey

The Comprehensive School Survey can be an effective tool if properly utilized. If it is to be effective, several assumptions must be accepted. These assumptions are:

a. The purpose of the comprehensive survey is to determine the "best" basis for meeting the educational requirements of the people of the district.

b. Both the external and internal factors which have an impact on the operation and activities of the educational system must be studied.

c. The survey represents a team effort that should involve local educators, civic leaders, and school planning specialists.

d. Systematic, comprehensive, and frank communication is essential.

B. PRELIMINARY PLANNING OF PROPOSED FACILITY

1. Selection of Architect

The architect is a central member of the planning team charged with the responsibility of translating the needs of the system into an acceptable design for new construction, or the preparation of detailed plans for the renovation of existing space. The unique role of the architect requires in-depth knowledge of those factors of program, site, and budget that will determine the end product.

2. When to Employ Architect

This central responsibility strongly suggests that architectural services should be secured at the outset of the project; certainly, no later than the initiation of the development of educational specifications. The local school board should not delay selection and employment of the architect.

The architect's professional services will include:

a. Preparation of preliminary studies, estimates, drawings, and specifications.

b. Development of models, if required.

c. Checking of materials submitted for proposed usage.

d. Keeping financial records.

e. Field inspection and supervision of work.

f. Issuance of certificates of payment.

g. Any other related activity specified in the contract.

The parish or city school board will pay a predetermined, standard fee for the services of the architect. Care should be exercised to insure that the best professional services are secured. The following factors should be considered:

a. Previous experience and reputation.

b. Adequacy of technical personnel and availability for project. Assess need for the architect's office to be in relatively close proximity to the district.

c. Thoroughness.

d. Creativeness within context of sound construction practices and wise expenditures of public funds.

e. Adequacy of supervision.

f. Business procedures and record keeping on the job.

g. Financial responsibility.

3. Architect's Contractural Agreements and Services

The American Institute of Architects has developed a "Standard Form of Agreement" that is recommended as a basis for the contractural agreement between the architect and the local school board. The negotiation of this form, or a modification, prepared and approved by competent legal assistance, is considered as standard operating procedure.

In general the contract covers the following items:

a. The definition of professional services to be performed.

b. The establishment of deadlines for preliminary studies and drawings, cost estimates, working drawings, and construction specifications.

c. The scope of supervision during the construction period.

d. Fees for standard services.

e. Compensation schedule for additional expenses resulting from change orders.

f. Compensation for partial completion in the event of abandonment of the project.

g. The information relative to site surveys, rights, restrictions, and boundary easements to be supplied by the board.

h. Strongly suggest that as part of the contract the architect be required to furnish a complete set of "As Built" drawings to the owner.

4. Duties of Architect

The architect will take the basic information as provided and develop preliminary plans.

a. Preliminary Drawings: From his studies of the information and data submitted, the architect will supply the School Board with a set of preliminary drawings. These drawings will consist of floor plan, site plan, elevations, wall sections, and a perspective drawing of the building.

b. Outline Specifications: The architect will also supply the School Board with outline specifications which will include the following:

(1) Site development
(2) Foundations
(3) Structural systems
(4) Floor construction
(5) Exterior and interior
(6) Ceilings
(7) Roofs

The specifications will also outline the type of comfort control and heating systems and define clearly the type and level of lighting employed. It will cover any special mechanical and electrical work, such as the intercommunication system and special requirements for shops, home economics departments, laboratories, etc.

c. Preliminary Estimate of Cost: The architect will prepare and submit a preliminary estimate of the cost of the construction work in order that the proper amount of funds can be budgeted for the project. This estimate is a very important part of the preliminary work and the architect must maintain up-to-date construction costs data so as to arrive at a budget that closely approximates the true cost of the project.

Preliminary plans and specifications should carefully be considered by the School Board to arrive at a complete and final design. When the preliminary drawings are complete the entire pattern and possible use of the building is fixed.

d. Agreement on Scope of Work: After the preliminary plans and the cost estimate for the school building and facilities have been made, the plans should be carefully analyzed to be sure that the proposed construction comes as near filling the needs of the school and community as possible. This re-examination of the preliminary plans will lead to efficiency and should reduce building costs. Of course, the educational program must be kept uppermost in the minds of those responsible for buildings and equipment.

5. Shortage of Budget Finances

If the amount of money available for the building program is not sufficient to realize all that is desired, it will be necessary to eliminate certain things. In making the eliminations, pupils should be the first consideration. Factors which are less beneficial to their needs should be eliminated first.

As previously stated it is wise to employ, even before the bond issued is voted, an architect on a "complete-the-job" basis and have him available from the beginning for expert advice in all stages of planning. Most architects will be willing to assist without charge to the school board before the bond issue is voted with the understanding that if funds become available they will receive the architectural contract. Especially can the architect be helpful in explaining and selling the program to a citizens' committee by preparing for their inspection simple drawings of proposed buildings. A good architect can also be of great help in making suggestions for selection of materials if economy is necessary because of limited funding.

6. Keeping the Public Informed

Citizens of the school community should be invited to participate and review the proposed educational changes and the expansion program. Their suggestions should be solicited and taken into consideration. A sound policy is a continuous public relations program that will keep the public well informed at all times as to the school system's present and future needs and accomplishments. When citizens are kept informed as to the needs of the school, their suggestions are more valuable.

C. PLANNING AND CONTRACTING

1. Preliminary Planning

The preliminary planning is a stage at which the architect/engineer and the supervisor of construction or staff for the school system shall develop the site plan, the space relationships, materials and equipment to be used, as well as the most desirable methods of heating and cooling.

Selection of type of construction shall be based upon prevailing wage rates and delivered costs of materials and equipment. It will be the duty of the architect to correlate these costs to the total budget and to stay within that budget insofar as possible.

Schematic plans shall be developed and modified until they meet with the approval of the staff and school board.

All final preliminary plans shall be presented to the State Fire Marshal, the State Department of Health, the State Department of Education, Attention: Bureau of School and College Plants, Baton Rouge, LA 70804, the City Parish Building Permit Department, and the school board's insurance company for their suggestions, recommendations, and approval.

Preliminary plans, when finalized, shall include the following:

a. Site plan snowing the location of buildings, utilities, streets, drives, environmental considerations, and adjoining properties. (Minimum scale 1" = 100 feet)

b. Floor plans and equipment layouts showing basic structure and arrangement of interior spaces. (Minimum scale 1" = 200 feet)

c. Enlarged floor plans of a typical classroom and such specialized areas as food handling, industrial arts, auditorium, science rooms, etc.

d. Elevations of buildings at a scale to clearly depict the structure.

e. Cross sections of typical walls or sections through the main building. Details as needed for clarification of design.

f. A rendering in pencil, pastel, or ink, approximately 30" x 40", may be furnished by the architect if deemed necessary.

2. Working Drawings

After the preliminary plans and outline specifications have been approved by the school board and the supervisor of construction, the architect will be notified in writing to develop working drawings and specifications. This notice shall include information as to changes in the preliminary plans and outline specifications, and it shall set forth the budget proposed for the project.

Working drawings shall be complete with adequate details to clearly delineate the building design intended by the architect. Structural, mechanical, and electrical design shall be in accordance with applicable local, regional, and national codes. It is usual to show on the title sheet the names of the architects, engineers, superintendent of schools, members of the school board, date, and the index.

The working drawings, plans, and specifications shall be reviewed and approved by the school planning committee and building committee. The architect will then be notified in writing of approval with notice of changes, alterations, and budgetary revisions. The architect/engineer shall finalize the plans and specifications as required.

The completed working drawings and specifications shall be presented to the school board for official approval and permission to advertise for bids.

The architect/engineer shall furnish to the owner three complete sets of plans exactly as provided the contractors for bidding. Also a complete set of final drawings and specifications shall be sent to the Bureau of School and College Plants, Louisiana State Department of Education, P. O. Box 44064, Baton Rouge, LA 70804, for record and file.

3. Approval by Local and State Agencies

Written approval of the final working drawings and specifications by the State Fire Marshal, the State Board of Health, the State Board of Education, the local Fire Prevention Bureau, and the City Parish Building Permit Department must be received by the school board office before advertising dates are set.

The approval of local agencies is required to obtain a building permit.

The architect must submit plans and specifications to the above agencies and obtain approvals required.

4. Advertising for Bids

After approval by the various agencies and the approval of a bid date by the school board, an advertisement shall be placed in the local journal and other newspapers as legally required. This notice must appear three consecutive times at weekly intervals. The contractors should be given sufficient time, depending upon the work involved, to prepare estimates for bidding.

The Daily Journal of Commerce of New Orleans is the largest construction daily in the South and an advertisement in this publication will receive immediate attention of contractors.

5. Proposal Form for Bids

The supervisor for the school board handling the construction project shall prepare a proposal form or use a standard form for this purpose to insure that all contractors' bids are in conformity. Alternates should be kept to a minimum and should in every case be clear-cut and concise. The language of the proposal form shall include the contractor's name, address, license number, and a statement pointing out that the contractor has carefully examined the General Conditions with Amendments thereto, Special Conditions, Instruction to Bidders, Specifications, Drawings, and all Addenda issued to date. The proposal form shall also set forth terms and conditions for acceptance of a contract by the successful bidder meeting specifications, liquidated damages, performance bond, and bid security. The proposal form should be approved by the owner's legal counsel.

6. Opening of Bids and Awarding of Contract

On the day bids are opened the architect/engineer will prepare a bid tabulation form tabulated for names of contractors, price of base bid, price for each alternate, total price, and if applicable, combined price. The sealed bids should be publicly opened promptly at time and place advertised, read aloud, and checked for document compliance with the bid proposal form. No bids can be received after stipulated time of bid openings. Such bids will be returned unopened to the bidder. When all bids have been read and recorded, the architect/engineer shall date and sign the bid tabulation form as a "True Copy."

The certified bid tabulation shall be presented to the school board at its next regular meeting for approval (or rejection) of the lowest bidder meeting requirements of the specifications. Upon approval by the board, the architect/engineer will notify the contractor of the award.

When the budget is exceeded and the board requires that the cost of the project be kept within the amount previously agreed, it shall be the duty of the architect/engineer to revise the plans accordingly without cost to the school board.

If the contract is awarded the contractor shall execute a contract with the school board in full accordance with their legal requirements. A bonafide Performance Bond equal to the contract sum shall be furnished by the successful contractor within 72 hours after notification of contract award. It is the responsibility of the contractor to record the original contract with the Clerk of Court.

The contract documents shall include the Contract, Performance Bond, Affidavit, and Certificate of Insurance.

CHAPTER TWO

A. SITE SELECTION AND ACQUISITION

The selection of a school site shall be in relation to the size and type of the proposed school. The nature of the educational activities to be accommodated should also receive careful and critical evaluation. The acquisition of school sites shall conform to all applicable legal requirements.

1. Location

School should be located near the center of the present and most probable future population to be served. It is desirable to locate schools within walking distance of the greatest number of pupils and with regard to accessibility from feeder streets and roads for those transported by bus. Density of population and traffic conditions will help to determine the spacing of schools. The distance considered as a reasonable maximum for pupils walking to school is one mile. The one-way travel time for pupils transported to school is considered to be a maximum of one hour.

In school districts where it is anticipated that there will be a growth or spread of population, sites should be located to avoid undue overlapping of the areas to be served by each school. In attempting to determine the geographic boundaries of such areas, the following controlling factors should be considered:

a. Enrollment range for each school type.

b. Possible future residential development that may affect the probable number of children per unit of area.

c. Transportation of children.

d. The hazards and natural barriers which affect the accessibility of a given school.

e. The policy of maximum sizes of schools.

f. Long-range cost of utilities.

The environment of the school site is very important. It should provide:

a. Healthful conditions for the pupils and teachers while at school.

b. Safe conditions for all while on the school grounds, in the building, and in the immediate neighborhood of the school.

c. Freedom from all disturbing noises, such as those resulting from heavy trucks, automobiles, railways, and airplane traffic, fire sirens and factory whistles

d. Freedom from obnoxious odors.

e. Pleasing surroundings that will tend to create a feeling of pride, happiness, and contentment.

The site should be located so that the school may use public-service utilities, such as water, gas, sewers, fire protection, and electricity.

2. Shape and Physical Characteristics

A rectangular shape is preferred for the school site. This usually permits greater flexibility in the placement of the building and facilitates the arrangement of driveways, parking areas, service areas, play and recreational areas. Ideally, a front to back ratio of three to five is recommended. Again, where the ideal is not possible, imagination, creativity, and proper planning will usually compensate.

The topography of the site is a variable that must receive important consideration. This should include:

a. The elevation of the site--which should be high enough to be protected from flooding in low-lying areas, and should not be at the base of hills susceptible to excessive water run-off.

b. The contour of the site--the contour should be slightly convex, with the building placed on the highest point. Grading is normally required to insure proper drainage.

c. Surface and sub-surface examinations of soil conditions--these examinations should be made before the purchase of a site. Adequate test borings should be made by engineering professionals to determine the characteristics of the subsoil. The contract for excavations and foundations should specify that the top soil be removed and piled, to be re-used after the building is completed.

3. Suggested Minimum Site Sizes

The size of the school site should be determined by the nature and scope of the contemplated educational programs. Other factors that should receive consideration are the provisions of facilities for games and recreation, outdoor instruction in physical education, and the relationship of the site to overall community planning.

The generally accepted recommendations for the size of school sites are as follows:

a. Elementary Schools. The minimum area should provide a basic 5-acre site, with one additional acre for each 100 students. Thus, an enrollment of 400 students would call for a 9-acre site.

b. Junior High Schools. It is suggested that there be a basic 20-acre site with an additional acre for each 100 pupils. Thus, a school of 600 students would require a site encompassing 26 acres.

c. Senior High Schools. This recommendation calls for a basic 30-acre site, with one additional acre for each 100 students enrolled. A senior high school with an enrollment of 1,000 would be housed on a 40-acre site.

These recommendations are intended as a guide in determining the most desirable site. Sites of inadequate size have been one of the primary causes of early building obsolescence and curtailed school-community programs.

4. Site Utilization

The size, shape, and contour of the site will have much to do with the placement of the buildings. The well-drained areas should, as much as possible, be left for play areas; however, the orientation of the buildings may depend largely upon streets or highways adjoining the site.

Sufficient space should be allowed between the streets and buildings for effective landscaping as well as for safety. This greater space will make it possible to further remove classrooms from street or highway noises.

Adequate and appropriate safety zones, fences, and natural barriers should be provided between and around activity areas. Provisions should be made for appropriate surfacing of various areas. All field and court areas for games and athletics should be of official size and have official markings. Sleeves with removable caps (flush with playing surface) should be used to provide for movable posts on multiple-use paved areas. Facilities such as electrical and water connections, and storage space should be readily accessible. There should be good overall drainage and proper grading to insure quick drying of all areas.

5. Walks, Drives, and Parking Spaces

Suitable walks, preferably concrete or hard surfaced, should be included in the development of all school sites. Walks should connect all buildings and should lead from the main entrances to streets and bus-loading stations. They should follow natural and direct lines and be located far enough from buildings to allow for the planting of flowers within the spaces between buildings and walks. Walks should be so constructed that children and adults will be inclined to follow them instead of cutting across the lawn or walking on the grass. They should be wide enough to take care of two or more people walking abreast. Where traffic is heavy, walks should have a minimum width of eight feet. Neither walks nor drives should serve a dual purpose; in the interest of safety, they should be constructed separately and should never intersect. Covered walkways between buildings are essential in Louisiana due to the heavy annual rainfall.

Driveways should be built so that traffic will be forced to keep within specified limits. The single, two-lane drive, leading directly to the main point of discharge and connecting with a parking area, is considered the best layout for general passenger drives. Schools providing bus transportation for pupils should provide a safe and convenient bus-loading area in the school site. It is undesirable to have a drive that encircles the building or cars driving very close to the building at any point.

6. Physical Activity Areas

In planning a new school site, the authorities should earmark sufficient funds for development of the grounds and see that consideration is given to the variety and number of students and adults to be served.

Priority of access to and from the school buildings should be given in the following order: pre-school, primary and intermediate, upper elementary, secondary students, and interscholastic athletic participants. Activity areas should be located in such a way as to insure maximum efficiency in supervision and safety. Areas which have spectator facilities should be located close to parking areas.

For the young elementary children there should be provided a separate shady area with such recreational facilities as slides, sand boxes, climbing structures, and jungle gyms. It is also desirable to allocate space on which they may play informal games. A concrete slab, 4 inches thick, 96 feet X 114 feet is a recommended outdoor play area.

7. Miscellaneous Site Needs

a. Provision should be made for anchoring flagstaff on the building or into the ground.

b. Trash receptacles for pupil use.

c. Screened or otherwise enclosed area for temporary storage of trash, leaves, etc.

d. Adequate drinking fountains near play areas.

e. Water hose faucets in appropriate locations to irrigate lawns and shrubs.

8. Other Site Considerations

According to the Council of Educational Facility Planners, "Site selection is primarily a technical and aesthetic problem, requiring cooperative efforts and special skills of school officials, architects, and engineers, recreational experts, urban planners, and legal consultants."

9. Basic Data Needs

The long-range planning of site selection can be obtained from:

a. A land use map--to show areas zoned for various purposes and actual use. It is available in most communities which maintain a permanent and full-time planning force.

b. Aerial photographs--these help to identify likely areas for school sites.

c. Soils map-- to guard against the purchase of land areas where subsoil or geological characteristics may increase foundation costs or compound drainage problems.

d. Topography map--to help identify the terrain and difference in elevations.

e. Highway plans and major road maps--to chart vehicular and pedestrian traffic flows.

f. Flood control maps--to aid in determining areas flooded during various disasters.

g. School service maps--these indicate existing school locations and attendance unit boundary lines.

h. Utility service plans--to show locations of present and proposed water, gas, and electric services.

10. Landscaping

A comprehensive landscaping plan should be prepared by a professional landscaper before any planting is done. In general, a planting scheme will consist of seeding or sodding of lawns, foundation planting, intersection plantings of hardy shrubs at angles and curves of drives and walks, tall trees to frame the building, and trees planted in grooves for shade. It is desirable to have a natural wooded area for outdoor education and school and community recreation.

CHAPTER THREE

A. THE BUILDING AND ITS CHARACTERISTICS

1. Architectural Character and Design

   a. School buildings shall be designed to utilize the contour and orientation of the school site to the best advantage.

   b. It should be functional, efficient, and inviting to students, teachers, and community.

   c. The lighting system should be designed by an approved lighting engineer to assure proper illumination.

   d. Economy, durability, suitability, and appearance should be considered in the selection of building materials and equipment to be used.

   e. The building design should be in keeping with the educational activities to be offered. It should denote clean simple lines and provide a pleasant environment in which to teach as well as learn. Interior finishes of walls, floors, and ceilings should be conducive to a cheerful and happy mood.

   f. It should be expansible. Many modern day schools are erected in stages. Structural framing and members should be designed to permit future alterations and additions.

   g. The structure should be flexible by the use of movable partitions. Utilities, switches, and controls should be carefully planned for future additions and changes.

   h. The design shall be functional for all pupils including those enrolled for special education (handicapped), by providing ramps, elevators, and other requirements designated in "American Standards Specifications for Making Buildings and Facilities Accessible to and Usable by the Physically Handicapped." (See Section on Special Education.)

i. The number of stories in new school buildings should be kept at a minimum. Despite possible savings in foundation and roof costs in multiple story buildings the added cost of extra Life Safety Protection measures will most likely offset such savings.

j. The one-story building allows easier, safer, unimpeded, horizontal traffic flow and eliminates objectionable vertical traffic flow resulting from a multi-story building design with expensive stairs and elevators.

k. One-story building design permits a more flexible room arrangement and is better adapted to future expansion programs; also it helps isolate noisy areas from quiet areas as well as providing other advantages.

l. In addition to being a learning center the school building is designed to provide a wide variety of uses by the community such as folk dancing, theater arts, meeting places, and many other activities.

B. TYPES OF CONSTRUCTION

1. Non-Fireproof Building

The trend is toward one-story buildings for both elementary and secondary schools. This type of building minimizes fire hazards as exits may be made at ground level at any point; consequently, frame construction or brick veneer construction with a composition shingle roof is acceptable. Generally a building of this type consists of a ground supported reinforced concrete floor slab with grade beams, wood load bearing walls, wood roof framing and wood sheathing. A wide assortment of wallboard material is available for use on interior walls. Cost of this type structure is most economical.

2. Semi-Fire Proof Building

This type construction is also well adaptable to one-story buildings as described above. The foundation would be a reinforced concrete, ground supported slab with larger grade beams and appropriate size brick ledge to support the brick veneer wall. The exterior stud wall framing is properly sized lightweight steel studs. Other framework is of lightweight unprotected steel columns and beams with lightweight steel roof joists; and the roof deck is generally corrugated steel decking which serves as a "Form" on which a lightweight concrete aggregate is poured. Then a built-up roof of hot asphalt, asphalt paper and pea gravel is applied. Numerous other roofing systems are also available and acceptable. Exterior walls of brick veneer facing with a backing of concrete blocks and interior walls of painted concrete blocks are both acceptable. For this type construction windows and exterior doors should be metal. The frames should also be metal.

3. Fireproof Structure

For this type of construction reinforced concrete or structural steel is generally used. Exterior walls of the fireproof building usually consist of four inch brick facing with eight inch masonry block backing. Interior walls can be six or eight inch masonry block construction with epoxy finish. Ceilings are normally suspended type with mineral acoustical tile.

All steel columns, beams, bar joists, and decking shall be properly fireproofed using lightweight insulation concrete or a sprayed on insulation.

4. Single and Multi-Story Schools

Wherever sufficient land is available and school space requirements are not too great, one-story buildings offer the advantages of fire safety; lower cost of construction; minimum space requirements for corridors; savings of space and cost of stairways, and the advantage of locating school exits and entrances to best advantage.

Where land space is limited or school space requirements are unusually large a multi-story building may be justified. Such structures are considered suitable for junior high and high school use but should be avoided for elementary schools. School buildings of more than two stories should be avoided except in extreme circumstances, This type building shall be equipped with complete automatic sprinkler protection on the upper floors.

C. FENESTRATION

In past years school design has been made with the thought of utilizing window areas as a primary means of lighting and ventilation. The lighting achieved from this means is referred to as natural lighting as opposed to artificial lighting provided through electrical lighting fixtures.

Both natural lighting and ventilation are difficult to control. It imposes upon the teacher the responsibility of proper window adjustments to accomplish adequate ventilation and the adjustment of shading devices on windows to obtain maximum lighting efficiency.

The advent of completely air-conditioned schools and the recognition of increased hazards from large glass areas in case of disaster and the need to conserve energy have further minimized the need for large window areas.

Windowless buildings desirable for reducing air-conditioning and heating requirements should provide limited window areas on exterior walls in case of a blackout from power failure. An auxiliary emergency lighting system, battery-operated, is needed in all stairways and exit corridors.

D. GENERAL INSURANCE INFORMATION

The purchase of insurance coverage for all school properties in the system is a most important function of our school boards. Provisions for fire, windstorm, riots, vandalism, and natural disasters must be included in insurance contracts as well as coverage for workmen's compensation, public liability, vehicle liability, and any other applicable coverage deemed necessary.

All insurance shall be with a reliable company having at least an "AA" or better financial rating and an "A" or better general policyholders' rating according to the current edition of Best's Insurance Guide with Key Ratings.

All insurance companies employed must be authorized to do business in the State of Louisiana.

Contractual agreements for materials and equipment, furnished and installed, and work performed on school premises and properties must include insurance approved by owner. The contractor shall furnish the school board with certificates of insurance as proof of coverage meeting insurance requirements.

The recommended minimum insurance to be carried by the general contractor and subcontractors on construction projects shall be as follows:

"A". Workmen's Compensation, including death (Statutory, State of Louisiana)

"B". General Liability, including death (Bodily Injury limits -- $100,000 one Person, $300,000 one Accident; and Property Damage limits -- $100,000 one Accident, $100,000 Aggregate)

Note: The board may require higher limits if warranted by the conditions.

"C". Motor Vehicle Liability (Minimum limits Bodily Injury -- $100,000 one Person, $300,000 one Accident; and Property Damage -- $100,000)

"D". Builder's Risk: Fire and extended coverage including vandalism and malicious mischief. (100% of value of contract written in name of contractor and owner as their interests may appear.)

Upon completion of a project the following is a checklist of items of building construction which the architect/engineer must fully describe for the insurance company.

1. Construction of foundations and floors.

2. Structural system - describe.

3. Exterior walls - type of construction.

4. Interior walls. If combustible, indicate the percentage relationship of the linear feet of interior wall to exterior wall.

5. Construction of roof. Describe type of roof deck, insulation for the roof, and slope.

6. Describe fire protection of structural steel.

7. Ceiling. (Fire rating, combustible or non-combustible)

8. Heating and air-conditioning system.

9. If combustible materials are used, describe fire protection of such.

10. Total cost of the project and approximate cost of each building.

11. Total square feet and cost per square foot. (To be computed according to the F. W. Dodge Corporation cost analysis)

If there are several buildings, describe the construction of each one.

CHAPTER FOUR

A. CONSTRUCTION STANDARDS AND LIFE SAFETY CODES

1. School Administrator Responsibilities are Major

The tremendous responsibilities assumed by those in charge of our schools, both in the planning of new buildings and in reconditioning and adding to existing schools, and in their operations, should be fully recognized by the public. School plants of today present a complicated problem because of the many added features and activities, such as windowless design, open space design, food handling, auditoriums, gymnasiums, stadiums, vocational training areas, etc. Each added activity brings new problems and different degrees of hazards.

It is of paramount importance that all new public school construction, additions, alterations and renovations of existing buildings, including materials, fixtures and equipment, conform with all applicable local, state, regional, and national codes.

2. Doors

a. Interior Doors

Doors from school rooms to corridors shall be not less than 36 inches wide. Doors from classrooms to auxiliary rooms may be 30 inches wide minimum. Double swinging doors for pupil use are not recommended.

Doors to all areas and rooms shall not have a locking device which can be locked against egress from the area or room.

Doors opening into double loaded corridors shall not be opposite each other. All doors opening into corridors shall be equipped with hardware which allows full swing against the corridor wall and should project no more than eight inches into the corridor.

Classrooms under 700 square feet net floor area or containing less than 35 students may have only one door. For classrooms over 700 square feet net area and seating more than 35 students, two doors is the minimum requirement.

b. Exterior Doors

All exterior doors in exits and exitways, as well as doors to enclosed stairways shall swing in the direction of egress. Exterior doors at required exits shall be equipped with panic type hardware. Chains, hooks, padlocks, and any other security devices shall not be used. Doors shall be equipped with approved self-closing devices. Minimum width of exterior doors is 36 inches.

Doors with glass areas in hazardous locations shall be fitted with tempered or safety glazed glass properly labeled as required by Louisiana statutory law.

c. Fire Doors

Fire doors approved by the National Board of Fire Underwriters shall be provided in interior doorways to the following spaces:

(1) Class A Doors - firewalls, transformer vaults, where required by the National Electric Code

(2) Class B Doors - stairway enclosures, vertical shaftways, mechanical equipment rooms, combustible storage rooms, and shop areas.

Smokestop doors shall be of metal covered or Underwriters' Laboratories or Factory Mutual "B" labeled.

3. Vertical Openings - General

a. Vertical openings include stair wells, pipe and electrical shafts, dumb waiters, elevator shafts, light shafts, and all other openings between floors.

b. All interior and exterior stairways shall conform with or exceed the requirements of NFPA No. 101, Life Safety Code.

c. Enclosed Stairways: All stairs shall be fully enclosed on all floors using fire resistive partitions and fire doors with at least a one-hour fire rating. Stairs are to exit directly to the outside or through protected exitways on the ground floor; storage closets located under stairs are prohibited. There should be no less than two widely separated stairways in each building, stairs should have a minimum width of 44 inches. It is suggested that on any one run of stairs, there be not less than three risers nor more than 12 risers. Risers should not be over seven inches and treads should not be less than $11\frac{1}{2}$ inches including the nosing. The use of a non-skid material for the tread is recommended. There should be a hand rail on both sides of the stairs, and all other applicable provisions of Fire Marshal Law shall be observed.

4. Interior Corridor Requirements

a. Double loaded interior corridors shall be of construction having not less than one-hour fire resistance rating and with all openings therein protected accordingly and conforming with or exceeding requirements of applicable local, state, and national codes. However, such corridor protection is not required when all classrooms served by such corridors have at least one door directly to the outside or to an exterior balcony or corridor as in Section 9-126, 1973 issue Life Safety Code.

b. Buildings containing 10 or more classrooms shall have main corridors at least ten feet wide net, exclusive of lockers. A six foot wide corridor will be acceptable if it is single loaded and the adjoining classrooms have outside approved exits.

c. No double loaded corridors, primary or secondary, shall be less than eight feet wide, net.

d. Any interior corridor over 300 feet in length shall be divided into sections not to exceed 300 feet in length by smoke partitions installed to conform with Section 6-6, 1973 NFPA Life Safety Code. The horizontal line of travel on any floor to an exit way shall be not more than 100 feet. (LRS: 1581, 1952)

e. No dead ends of corridors shall extend more than 30 feet beyond stairways or other means of exit.

f. Where doors swing open into corridors, the width of the corridor should be increased to provide a minimum of six feet of unobstructed space.

g. No obstruction shall be placed in any corridor.

h. No designated exit passageways shall be allowed through any occupied room.

i. The construction, size and placement of all exterior corridors or balconies shall conform to or exceed the requirements of applicable local, state, and national codes.

5. Windows for Emergency Rescue or Ventilation

Except in buildings with complete sprinkler protection, every room or space used for classrooms or other educational purposes or normally subject to student occupancy, unless it has a door leading directly to the outside of building, shall have at

least one outside window which can readily be used for emergency rescue or ventilation purposes, and which meets all of the following provisions:

a. Is readily openable from the inside without the use of tools.

b. Provides clear opening with a minimum dimension of approximately 22 inches and is approximately five square feet in area.

c. Bottom or window opening is not more than 32 inches above the floor.

d. Where storm windows, screens, or burglar guards are used, these shall be provided with quick-opening devices which can be readily opened from the inside for emergency egress and shall be so arranged that when opened will drop to the ground.

6. Fire Alarm Systems and Fire Drills

It is mandatory that all schools have at least a manually operated approved fire alarm system to be used for fire alarm purposes only. A combination manual and automatic system is preferred. The fire alarm system shall be capable of being heard by all persons in the affected building when doors are shut. The first duty of the school staff when a fire is discovered is to assure complete evacuation of the building. Fire drills, if properly conducted, not only insure orderly and rapid evacuation of the building but teach self-control as well. To this end, the administrators, teachers, custodians, and pupils should submit rigidly to discipline and participate wholeheartedly in fire drills. Life Safety Code Bulletin of 1973-1974, Section 17-3, Educational Occupancies, 17-3112, states: "There shall be at least eight (8) fire drills a year in schools."

It is suggested that occasionally the principal use various stations to check operation of fire alarm systems. The sending stations shall be located at or near the exits with the maximum distance between sending stations on each floor

along the normal travel line not exceeding 100 feet or 150 feet and one flight of stairs. It is often desirable to use a fire alarm system which will indicate the source of the alarm.

7. Fire Extinguishers

The fire rating of an extinguisher, rather than its size, is the guide to its extinguishing ability. Underwriters' Laboratories, Inc., fire extinguishers carry on their nameplates a classification consisting of a numeral followed by a letter. The numeral indicates the approximate relative fire extinguishing potential of the extinguisher on the class of fire, which is identified by a letter. (CLASS A and B only.) For example, a 4-A extinguisher can put out approximately twice as much fire as a 2-A extinguisher.

Class B extinguisher ratings are not directly related to the amount of fire which can be extinguished by a particular extinguisher since this is related to the degree of training and experience.

Class C extinguishers have no numerical rating because such fires are essentially Class A or Class B fires involving energized electrical equipment.

CLASS A - Fires in wood, textiles and other ordinary combustibles containing carbonaceous material. These are extinguished by cooling and quenching with water which wets down material and prevents glowing embers from rekindling.

CLASS B - Fires in gasoline, oil, grease, paint or other liquids that gasify when heated. These are extinguished by smothering, cooling and heat shielding. Carbon dioxide and dry chemical are effective on this type of fire.

CLASS C - Fires in live electrical equipment. These type fires require a non-conducting extinguishing agent. A carbon dioxide extinguisher smothers the fire without damaging the equipment. Dry chemical is also effective.

Fire extinguishers in classroom area, gymnasium, auditorium, and assembly area shall be provided on the basis of one (1) extinguisher with at least a 1A rating for every 2,500 square feet of floor area, or, one (1) extinguisher with a 2A rating for every 6,000 square feet of floor area provided the maximum travel distance to reach an extinguisher does not exceed 75 feet.

Additional fire extinguishers shall be provided in laboratory rooms, boiler rooms, cafeteria kitchen, flammable liquid storage rooms, and shops. These extinguishers shall be installed as follows: One (1) 8B rated extinguisher with a maximum travel distance to extinguisher of 50 feet if extinguisher was labeled prior to June 1, 1969, or one (1) 10B rated fire extinguisher with a maximum travel distance to extinguisher of 30 feet if extinguisher was labeled after June 1, 1969.

Additional fire extinguishers with at least 2A ratings shall be located on both sides of stage area.

B. SERVICE SYSTEMS

1. Water Supply

All schools should be provided with an adequate supply of safe, potable water approved by the State Department of Health. Public water supplies where available should be used. Plans for new water supplies, or for major changes in existing supplies, should be submitted to the State Department of Health for review and approval before beginning any construction work thereon.

Information on the proper construction of wells and cisterns may be obtained from the Parish Health Unit and from the State Department of Health.

When deemed necessary personnel of the local health units shall inspect school water supplies prior to opening of new schools. Samples are collected at the time of inspection and submitted to the Department of Health laboratory for bacterial examination to ascertain the safety of the supply.

It is desirable that hot water be available for lavatories and showers; however, in lower grades, only warm (not hot) water should be available.

2. Emergency Water Needs

Special storage tanks, individual containers, sprinkler systems, etc., that may be required will need attention by qualified authorities.

3. Waste Disposal

All wastes should be disposed of in a safe and sanitary manner and plans should include facilities for this. Wastes may be grouped into three classes: sewage, garbage, and rubbish. The term sewage includes body waste and other forms of liquid wastes. The term garbage includes all

putrescible wastes except sewage and body wastes, and includes vegetable waste and animal offal. The term rubbish includes all non-putrescible waste unmixed with garbage.

4. Garbage and Rubbish Disposal

Garbage and rubbish storage and disposal is probably one of the most often overlooked phases of school planning. This is especially true of rural schools. Inadequate facilities for storage and/or disposal of such wastes create breeding and harboring places for flies, roaches, rats, and other vermin and insects.

Garbage should be stored in tight metal containers and should not be permitted to accumulate on the school premises. Schools should be provided with special screened rooms for the storage of garbage cans awaiting disposal. The room is provided with concrete floors sloped to a floor drain and is equipped with facilities for washing the cans. The room is constructed in a manner to prevent insect ingress as much as possible.

Generally, garbage can be disposed of satisfactorily in one of three ways--public collection, burial, or incineration.

a. Incineration

Wastes such as trash, rubbish, and refuse can be burned in an incinerator.

Trash is a mixture of highly combustible waste such as paper, cardboard, cartons, wooden boxes, and combustible floor sweepings.

Rubbish is a mixture of combustible waste and contains up to 20% of cafeteria wastes but contains little or no treated papers or plastic.

Refuse consists of an approximately even mixture of rubbish and garbage by weight.

Quantities of Waste Produced: Grade Schools - 10 lbs. per room plus 1/4 lb. per pupil per day -- High Schools - 8 lbs. per room plus 1/4 lb. per pupil per day.

Do not estimate more than 4 hours' operation per day for the incinerator.

The incinerator should be of steel welded construction and lined with 4-1/2" thick first quality firebrick and 2" thick 1900 degrees F. high temperature block insulation. Grates are cast iron. Three separate combustion chambers, charging door, and ash door shall be as specified by the Incinerator Institure of America. The stack to be of 12 gauge steel plate construction and lined with minimum 2-1/2" thick insulating firebrick. Stack is self-supporting and topped by stainless steel spark screen. A gas burner is required for burning of smoke and odor before entrance into stack.

The location of the incinerator should make it accessible for burning cafeteria trash and other refuse as well as for paper collected in regular housekeeping activities.

5. Sewage Disposal

Whenever possible, the school sewage system should be connected to public sewage facilities. If a public system is not available, an independent treatment system must be provided.

Septic tanks incorporating either filter beds or absorption fields for secondary treatment have been used in the past but are not considered an entirely satisfactory means of sewage treatment for schools.

Two types of sewage treatment systems have come into widespread acceptance which are much more dependable than the septic tank system and which compare favorably in cost. These are package type "extended aeration" plants and oxidation ponds.

Oxidation ponds have been used successfully for the treatment of sewage for a number of years. They have the advantages of low initial cost and low maintenance cost. The only restriction to their use lies in land availability since they do require much larger areas than do other treatment processes. The pond must be properly engineered to be effective. Generally, they would be sized on the basis of approximately 840 school students per acre of water surface.

"Extended aeration" type plants have been used considerably for schools in the state. These plants are actually modified activated sludge plants in which there is no separation of solids from liquids prior to aeration. Such plants are usually sized on the basis of approximately 15 gallons per student and 0.65 lbs./day Biological Oxygen Demand per student. These plants require proper engineering for maximum effectiveness.

6. Plumbing Fixtures

All plumbing shall be installed by licensed, competent plumbers and installed in accordance with the manufacturer's instructions and in strict compliance with the State Plumbing Code. Applicable local plumbing code requirements must also be met. A copy of the state regulations may be obtained from the State Department of Health.

All valves should be tagged for identification and a diagram or chart showing details of the plumbing layout should be easily accessible in the custodian room.

The number of plumbing fixtures for pupils' toilet rooms and locker rooms should conform with the minimum requirements of the State Sanitary Code.

The approximate number and ratio of fixtures for each school level should be as follows:

PLUMBING FIXTURE CHART
(Minimum Suggested Plumbing Fixtures and Users)

Fixture and Where Used	Mounting Height	Ratios
Water Closets		
Kindergarten through 3rd Grade Boys	13"	1:30
Kindergarten through 3rd Grade Girls	13"	1:25
Fourth through Seventh Grade Boys	15"	1:60
Fourth through Seventh Grade Girls	15"	1:30
Eighth through Twelfth Grade Boys	15"	1:60
Eighth through Twelfth Grade Girls	15"	1:45
Administrative Staff - Men	15"	As Needed
Administrative Staff - Women	15"	As Needed
Faculty - Men	15"	As Needed
Faculty - Women	15"	As Needed
Urinals		
Kindergarten through 3rd Grade Boys	18"	1:25
Fourth through Seventh Grade Boys	20"	1:30
Eighth through Twelfth Grade Boys	24"	1:45
Administrative Staff and Faculty	24"	As Needed

Note: Urinals for females may be substituted for water closets, substitution not to exceed more than one third of the total.

Lavatories		
Kindergarten thru 3rd Grade-Boys or Girls	24"	1:30
Fourth thru Seventh Grade-Boys or Girls	24"	1:30

Eighth thru Twelfth Grade-Boys or Girls	31"	1:40
Administrative Staff and Faculty	31"	As Needed
Showers For P/E Installations		
Fifth through Eighth Grade Boys	66"	1:4
Fifth through Eighth Grade Girls	56"	1:4
Ninth through Twelfth Grade Boys	70"	1:4
Ninth through Twelfth Grade Girls	58"	1:4

Special toilets of appropriate rim height should be provided for kindergarten and primary grades. Each kindergarten and first grade classroom shall have at least one restroom for each sex. Each restroom shall be provided with a water closet only. A lavatory in a sink type cabinet should be located outside of each restroom nearby.

Where water pressure is sufficient, the use of individual flushometer valves is recommended for water closets and urinals. Such valves must be equipped with proper backsiphonage protection (vacuum breakers).

Lavatories should be located so that pupils will pass them as they leave the toilet rooms.

Toilets for public use should be conveniently available to auditoriums, gymnasiums, and other parts of the school plant frequently used by the general public.

Lavatory and toilet rooms shall be available to cafeteria staff.

Appropriate lighting and venting provided must be maintained in a clean condition. Constant and special attention should be given to the sanitary upkeep of toilet rooms and fixtures to provide clean and attractive restrooms for students and faculty at all times.

Handwashing fountains, soap, and individual towels shall be provided in convenient locations in the dining hall or cafeteria.

Drinking fountains should be provided in the ratio of one to 75 pupils, with a minimum of one to each floor. Drinking fountains should not be located in toilet rooms or attached to lavatories or sinks. Those located in halls and corridors should be recessed into walls where possible. Drinking fountains should also be installed on the exterior of buildings near play areas.

Recommended heights of drinking fountain nozzles are:

- For kindergarten and primary grades ---- 24 inches
- For upper elementary grades ---------- 28 inches
- For junior high students ---------- 32 inches
- For senior high students ---------- 36 inches

Service sinks: At least one sink should be provided on each floor of each building. This fixture is preferably located in a custodial "closet". Outside hose fixtures (bibs) should be provided on the ratio of one for each 100 feet of building perimeter.

Provide a service sink with hot and cold water supply in certain areas, such as library, art classrooms, home economics, etc.

7. Electrical Installations

The installation of all electrical wiring and apparatus for lighting, power, and electric appliances shall be done in accordance with the requirements of the National Electrical Code, the Underwriters' Laboratories, the National Board of Fire Underwriters and other applicable codes.

a. Lighting

The technology of lighting for schools has changed greatly in recent years. Terminology

has become more refined with the advent of controlled environments for educational programs, use of teaching aids, and other visual media.

A good visual environment permits fast, accurate and comfortable seeing. Control of glare-producing light sources, brightness contrasts of surfaces within the room, and other factors which affect visual acuity or eye comfort must be considered. Illuminating engineers and architects now use design parameters for lighting which take into account not only measurement of footcandles at the task being performed but also the level of task illumination and effects of brightness, reflections, and the differences in brightness along the line of sight.

Energy Conservation: A high percentage of a school's electrical power consumption goes into lighting. New design approaches, along with more efficient lamps and luminaries, and localized controls, make energy designs possible with no loss of light intensity.

The design and specifications for illumination levels for various tasks and locations should be provided by a qualified lighting engineer.

b. Climate Control

In today's changing educational environment, the inclusion of air-conditioning in new school plans as well as renovations is most important. The modern levels of the open plan demand controlled heating, ventilating and air-conditioning (HV/AC). Air-conditioning provides a better learning environment, cleanliness, more effective use of space, increased building usage and better student/staff morale.

A school climate control system must fulfill a number of requirements:

(1) Provide an independent climate controlled system for administrative areas which can be operated independently when classrooms are not in use.

(2) Provide large volumes of ventilation air to cafeterias and auditoriums to cleanse the air.

(3) Fulfill the special air-conditioning and ventilation requirements of locker rooms, shops and other special purpose areas.

(4) Within or adjacent to classroom, the system must operate at a sound level and quality which does not interfere with speech.

(5) Maintain comfortable temperature and humidity levels with easy-to-operate, individual room controls.

(6) Constantly provide sufficient volumes of outside or treated air to disperse odors and stuffiness.

(7) System must be easily serviceable, with a minimum amount of down time to cause student/staff discomfort.

(8) Equipment must remain reliable and dependable under a range of conditions and uses.

(9) It is not practical to completely air-condition kitchens. Work and serving areas should be spot cooled.

(10) Plus whatever requirements may be unique to an individual school.

It must be recognized that the components of HV/AC systems such as compressors, electric wiring, controls and ducts are possible

sources of fire and its rapid spread. Because of the fire and smoke hazards the HV/AC system should be designed by a Registered Professional Engineer with previous school design experience. The HV/AC system installation shall conform to the requirements of State Fire Marshal and applicable codes and standards.

8. Gas Piping Installations

Gas piping shall be exposed in habited spaces wherever practical; however, no gas piping shall be installed under a building. Also, no gas piping shall be allowed in concealed, inaccessible or unventilated spaces unless provisions are made for natural circulation of the air in the space.

The installation of all gas piping and gas fired appliances shall conform with the requirements of National Life Safety Code 1974 Issue, The National Board of Fire Underwriters and other applicable codes.

Natural gas fuel lines shall be of hard copper or steel pipe. Soft copper tubing is not permissible. Only rigid type connections shall be used on heating apparatus. All floor type heaters shall be secured to the floor. In addition to the valve supplied with the appliance or equipment there shall be a cut-off gas cock installed at each terminal.

9. Fuels for School Heating

In the field of energy generation, useful heat is produced by the combustion of fuels in steam or hot water boilers or by direct-fired heating units.

Combustion is defined as the rapid chemical combination of oxygen with the combustible elements of the fossil fuels: oil, coal, and gas. In Louisiana practically all schools use

natural gas for heating; and a few schools, where natural gas is not available, depend upon butane.

a. Natural Gas: From the standpoint of cost, trouble-free performance, and ease of handling and control, natural gas offers many advantages that make it the most desirable fuel. It mixes readily and intimately with combustion air and is free of ash and practically smokeless. Pollution of the air is therefore minimal.

   Natural gas has a high heating value - averaging about 1,000 BTU/cu. ft. The gas is pumped through a pipeline network directly to the point of use and is generally available in a wide range of pressures to meet the requirements of both large and small installations.

   A major consideration in gas systems is safety. Because gas mixes easily with air, the potential explosion hazard is greater than with other fuels. Systems should be carefully designed with positive safeguards against ever-dangerous gas leakage. All gas-fired equipment (boilers, water heaters, heating units, etc.) shall be individually vented to exterior of building above eaves of the roof. Gas piping must strictly comply with the American Standard for installation of Gas Piping and Gas Appliances in Buildings.

b. Butane Gas: Certain commercial mixtures of liquified petroleum gas (LPG) are commonly referred to as butane. This gas has properties quite different from natural gas.

   Butane gas or vapor is heavier than air and will diffuse into the atmosphere very slowly unless the wind velocity is high. Its heat-

ing value is high - two and one-half times natural gas. At atmospheric pressure butane will boil at 31 degrees F. and it is safely stored only in closed pressure vessels built according to regulations and equipped with safety devices as required. Storage tanks must never be filled completely with liquid. LP-gas tanks are located outside above the ground.

As previously stated butane gas is used for heating school plants which are remote from natural gas pipelines. The cost of butane compared to natural gas is about 3 to 1. Butane gas burns with an exceptionally clean flame and on this count, it is one of the most satisfactory of all fuels. LP-gas can be readily shipped in cylinders or tanks by rail, water or truck.

c. Fuel Oil: Oil is in many respects an excellent fuel for the generation of heat and power due to ease of handling and storage, and its relative cleanliness in firing. For school heating a light distillate oil such as No. 1 or No. 2 would be employed.

Fuel oil is normally lighter than water as the specific gravity varies from about 0.77 to 1.03. The heat value of fuel oil can generally be taken as 138,000 BTU per gallon.

Oil fuel systems require either underground or surface storage tanks and must be designed to meet all local and national code requirements.

The supply of natural gas is limited and the demand is great which inevitably will increase the cost of this energy source compared to fuel oil. It is projected, therefore, that oil usage may ultimately become the major heating fuel for our schools. Only a few Louisiana schools, at this time, have fuel oil heating systems.

10. Fuel Storage

Proper facilities should be provided for the storage of fuel oil. Tanks should be outside of the building and underground. Complete data on fuel oil storage can be obtained from Bulletin No. 30 of the National Board of Fire Underwriters. When liquefied petroleum gas is used, the installation shall be in strict conformity to the requirements of the Louisiana Liquefied Petroleum Gas Commission and other applicable codes.

11. Mechanical Equipment Rooms

Any mechanical equipment which is subject to explosion such as boilers, central hot water systems, and refrigeration machinery shall be located in a mechanical equipment room which is separated from the building by fire walls and fire doors. Entrance to these rooms from the exterior only is preferred and these rooms shall have adequate combustion and ventilation air inlets, windows, or skylights. One wall of the mechanical equipment room shall be an exterior wall. The interior walls shall be concrete block or brick masonry with soundproofing insulation.

12. Hot Water Heaters

Water heaters should not be installed in a room which is normally occupied. Approved storage type gas-fired water heaters shall be used with safety pilot, automatic controls, and a safety pop-off valve relieving to atmosphere or through an unobstructed line. Water heaters should be properly vented and provisions should be made to admit combustion air.

13. Exit and Emergency Lighting

With the exception of one-story buildings, exit and emergency lighting is mandatory in all school buildings. Flexible plan and open plan buildings and portions of buildings having interior and windowless rooms, areas and corridors shall have emergency lighting.

All corridors, stair enclosures, exit-ways, lobbies, and all areas in the line of exit travel shall be adequately illuminated at all times when buildings are occupied.

The electric lights illuminating the exit and directional signs and the exit-ways shall be lighted from a source independent of that of general lighting and shall be controlled by an automatic device which will operate reliably to switch the current to an independent secondary source if the primary source of current fails.

14. Fumes Exhaust

An exhaust hood vented to the outside must be used in laboratories or kitchens in areas of open flame or electric heating. In kitchen exhaust hoods a fusible link should be installed in the exhaust air stream designed to actuate a fire extinguishing device and the fire alarm systems. Also to stop the flow of electric current to the exhaust fan motor.

15. Storage of Combustible Materials

Storage of flammable under stairways, in attics and other concealed spaces is prohibited. Provide approved type metal containers with covers for the collection of combustible rubbish, waste paper and refuse. Provide an approved storage locker (metal) for the storage of paints, thinners and other flammables.

16. Safety Glazing Installations

"Safety glazing material" means any glazing material such as tempered glass, laminated glass, wire glass or rigid plastic, which meets the test requirements of ANSI Standard Z-97.1 - 1966, be permanently labeled and meet or exceed all requirements of the State Fire Marshal Code.

These safety glazing materials are so constructed, treated, or combined with other materials as to minimize the likelihood of cutting and piercing injuries resulting from human contact with the glazing material. It shall be installed in glass entrance doors (framed or unframed), heavy traffic areas, and hazardous locations. Louisiana Revised Statutes comprising R.S. 40:1651 - 40:1655 require safety glazing material installations.

CHAPTER FIVE

A. SPACE REQUIREMENTS - INSTRUCTIONAL

1. Classrooms in General

Every educational building devotes more space to general instructional areas than for any other purpose and must be given careful consideration for maximum long-term effectiveness.

Three space requirements can be generalized to cover classroom uses:

a. Teacher-student discussion and recitation.

b. Student activity and experimentation.

c. Display and exhibition of student work and reference materials.

2. Kindergarten

The location of the kindergarten should be safe and convenient on the ground floor of the school building. Basement locations are undesirable.

It is recommended that a minimum of 35 square feet of floor space be allowed for each child. The K-classroom should not be less than 750 square feet.

Outdoor play space should include a minimum of 75 square feet of space per child. It should be fenced and separated from areas used by older children. Consideration should be given to shady and sunny areas and some sheltered areas are also needed.

3. Elementary Classrooms

Elementary classrooms are usually the open space design or conventional type. Each classroom should be designed for about 25 students and should contain 30 square feet per pupil with an additional 200 square feet of work space.

Built-in work benches and a sink should be provided in the classroom work area. Lockers, storage cabinets, and shelves are also needed.

The classroom should also contain a closet and shelves for the teacher's use.

4. Open Plan

The open plan school building provides flexible educational facilities and spaces. Interior walls and columns are eliminated in the clear space architectural concept. The open zones are subdivided into learning spaces for large or small groups by the use of movable storage cabinets, bookshelves, room dividers, chalkboards, and screens. Seating is movable and of a variety of types.

It is essential that sound absorbing acoustical quality materials be used for walls and ceilings. Floors must be carpeted. An open space school must be air-conditioned.

Provision must be made for placement of teacher aids normally available in conventional spaces. The individual needs of students must be considered. The open space design is better to group and regroup students and is more adaptable for elementary education. The open space design has a place and can make a definite contribution to school facility planning. All factors of this concept must be considered by the planners including educational programs and teacher training and selection.

5. Secondary Classrooms

Every classroom should be planned to function effectively for the students as an environment for learning, living, and growing. Space allotted for the classroom should be well-balanced, planned functionally--in response to present needs--and should take into account observable and future trends.

In such a classroom a floor area of 25 to 30 square feet per pupil is considered desirable. There should be adequate storage cabinets, shelves and filing cases for teaching supplies, materials, and books; and there should be about 16 lineal feet of chalkboard and 8 foot chalkboards in each room.

6. Art Center

The area devoted to art should be located near the homemaking units and the general shop and if possible the windows should face north. It is generally considered desirable to provide 30 to 35 square feet of floor space per pupil, exclusive of any space used for storage; however, if finances are limited, smaller areas may prove satisfactory. Special consideration should be given to lighting and decoration for high levels of illumination, and to suitable conditions for color discrimination.

The art center should be provided with an abundance of storage shelves, drawers, cupboards, exhibit counters, work counters, filing cabinets, picture files, folio trays, unfinished work storage, cubicles, bookshelves, work sinks (with hot and cold water), large tackboard area, chalkboard, drawing tables, large work tables, easels, model stands, spray outfits, paper cutters, and provisions for visual aids. In addition, potters' wheels, kilns, and other provisions for clay modeling are desirable. The art room should be planned as an informal working laboratory rather

than as a conventional classroom. Provisions should be made for display space for art objects, both inside and outside the classroom.

A number of work centers should be set up in the art room, such as: clay center, wood center, metal center, and weaving center. Adequate storage space should be located near the respective activities. There should be a large bulletin board on which murals could be executed or comprehensive displays arranged. Movable service units, on which various kinds of supplies and equipment can be wheeled to the place needed, are useful.

7. Business Education

The general purposes of business education are: (1) to provide training in office occupations and (2) to equip students with job preparation for entering the business world. Whether there should be separate rooms for the various course offerings or whether some areas of instruction should be taught in a common room depends on the size of the school. In large schools, separate rooms are provided for shorthand-typewriting, general office machines, bookkeeping, and data processing.

All rooms should be provided with adequate and properly located electrical receptacles for the variety of electrical office machines used in business education. Considerable office supply and machine storage requirements are necessary. Built-in cabinets for storage of supplies plus adequate work counter space, wash fountains, and sinks should be accommodated in the planning stage.

Teachers should be provided with office space or preparation space next to their areas of instruction. A minimum classroom space of 30 to 35 square feet per pupil is felt to be necessary

because activities in the business education departments require considerable movement of the students. The size of each room is determined by the type of facility, number of pupil stations, kind of equipment, and class activities.

Other considerations for business education facilities are listed below:

a. Effective sound-deadening materials should be used on the ceiling and walls of typewriting and office machine rooms. Carpet should be considered for floors.

b. Some chalkboard space is necessary in each room; also properly located bulletin boards.

c. Adequate, well-diffused, and glareless light is necessary for all rooms. Lighting business laboratories presents very special problems as work levels are detailed and require a high level of lighting.

8. Distributive Education

This section of Bulletin 711 is designed to aid school administrators, vocational directors and teacher-coordinators to better determine equipment needs, classroom layouts and room locations for distributive education students. It is not meant to contain specifics, but to give an overview. As with any given vocational program in any community the appropriate equipment and instruction can be determined only after evaluating the needs of students as well as the needs of the community or area.

Distributive education is no more expensive than the typical classroom program of old. However, to be effective, its structure, design and layout require some serious thought prior to its effective implementation.

Realizing the ever present expansion and rebuilding of schools, this section intends to itemize needs for the ideal D. E. classrooms whereby administrators and architects alike may at least formulate ideas before drawing blueprints. Serious consideration should be given to the factors listed below. The typical equipment list is given to give planner some idea of room size, necessary storage, wiring, lighting, and location.

a. Physical space: Adequate space should be provided for the utilization of tables as opposed to desks. Ample storage space should be available and the inclusion of at least one additional room should be a consideration. (Attention is called to the need for storage, office facilities with telephone and laboratory space.)

b. Laboratory space: May be included in terms of a larger classroom or an additional room.

c. Basic Equipment: Needs vary from community to community and teacher to teacher. The dominant requests are for:

(1) Sink
(2) Window Display (facing hall)
(3) Interior Display
(4) Cash Register
(5) Tape Recorders
(6) Telephone
(7) Video Tape Equipment
(8) File Cabinets
(9) Overhead Projectors
(10) Screens
(11) Mannequins
(12) Sign Machines
(13) Student Desks/Tables
(14) School Store Equipment

d. Display: Consideration should be given to laboratory space, interior display shelving and counters, a display window area, display props and equipment, and a sign machine.

e. Location: High student traffic areas are not detrimental to a D. E. classroom and are in fact assets. Although many classes appreciate the quiet end of the hall, distributive education does not require such. Suggested location areas:

(1) Main Thoroughfare
(2) On First Floor
(3) Near Main Entrance
(4) Integral Part of Plant
(5) Near an Entrance

A prime location would be near the front entrance which would not only facilitate the movement of display materials and equipment, but would be convenient for business people and guest speakers who are often in the distributive education classroom.

As a result of the activities involved (i.e. advertising layouts, store layouts, displays, advertising copy, marketing research, sales demonstrations, etc.), tables which are flatter and larger than desks are far more feasible for the operation of a distributive education instructional program.

Since the D. E. classroom can readily be described in the majority of cases as a scaled down store, storage space becomes a factor of concern. Where does one place equipment for protection when it is not in use? Four areas are delineated and itemized below, listed according to their efficiency as storage space.

a. Additional Room(s)
b. Closets
c. Cupboards
d. Wallshelves

The ideal situation would be, of course, to have an additional room with cupboards and wallshelves.

Lack of physical space is a major deterrent. There is no drastic need variance between small and large communities. The only noticeable difference is in terms of classroom space needed for the number of students.

Equipment varies from program to program and layout space varies with each program requirement.

A coordinator's office with a telephone similar to a guidance counselor's office is ideal for individual student consultations concerning job placement, job evaluation and job problems, for setting up employer conferences, for vocational guidance talks with students, and many other individual and small group activities.

The perfect layout is perhaps the "Impossible Dream." Adequate space for student tables, a lab, storage, and a teacher-coordinator's office are the basic needs.

Many D. E. suppliers will provide classroom layouts free of charge. They have several standard classroom illustrations available in their catalogues and will provide these layouts and equipment lists to schools on request.

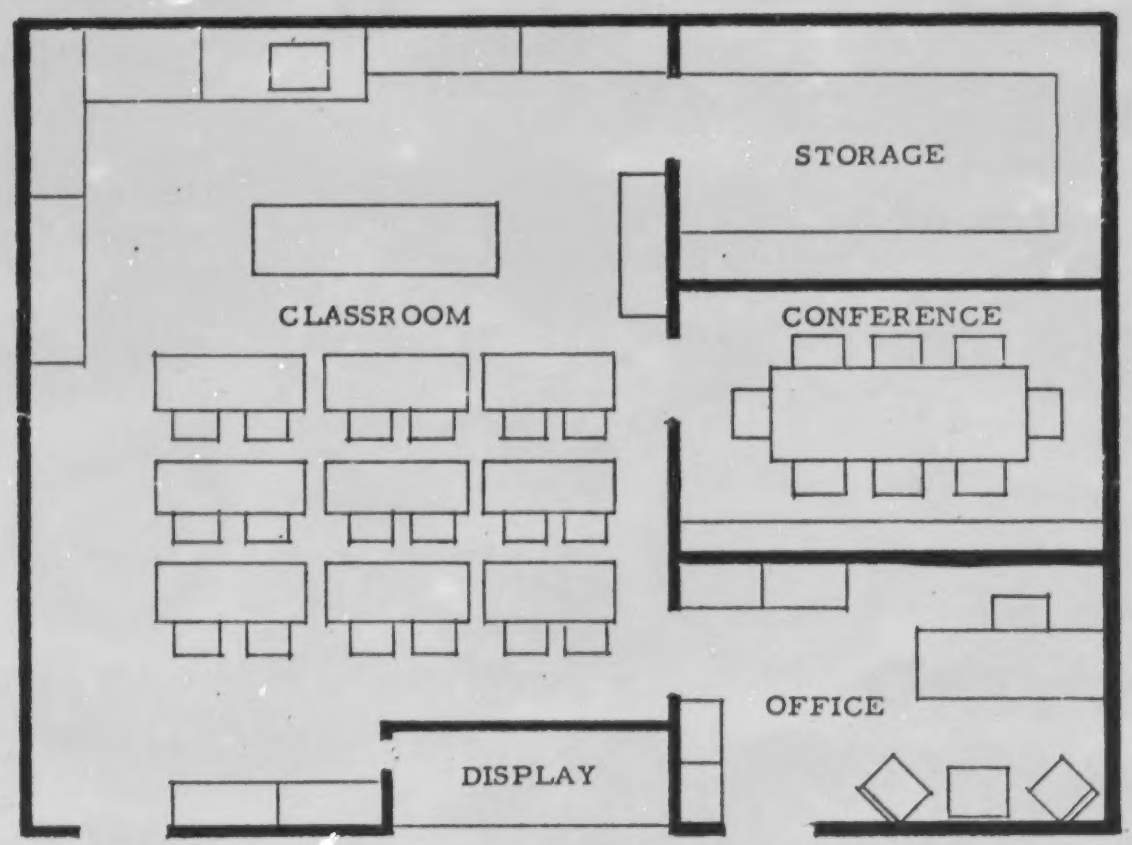


FIGURE 1
SUGGESTED LAYOUT FOR D. E. CLASSROOM

9. Home Economics

Home economics facilities and suggested floor spaces depend upon the size of the school and upon the selected curriculums.

The home economics department should be planned to include appropriate space and equipment for teaching all subject matter areas of home economics -- foods and nutrition, textiles and clothing, child development, housing and home furnishings, health and home care of the sick, social and family relationships and management and consumer problems. The department should be well planned, attractive, and inviting. It should represent attainable standards for families in the school and community and at the same time provide an environment in which pupils will be motivated to improve their own homes. It is desirable to have the home economics department as a part of the school building rather than as a separate cottage. The rapidly changing character of curriculum and teaching methods makes it imperative that a home economics department have flexibility. Ample space must be allowed for changes in arrangement and choice of equipment.

The location of the home economics laboratories in the building should be convenient for delivery of materials and also should be situated where disturbances from other sources will be at a minimum.

Careful attention must be given to selection of equipment for the several areas of home economics studies, particularly for compliance with safety standards.

a. For small classes (16-20 students) with one teacher an "all-purpose" single room will suffice; however, there will be no allowance for expansion. Adequate storage space together with equipment and furnishings related to all phases of homemaking and occupational education skills shall be provided.

b. For larger schools separate laboratories are provided for foods and nutrition, textiles and clothing. Space and equipment are provided for 24-32 pupils per class. Each laboratory contains ample storage space and a planning center with teacher's desk. A regular size classroom may also be included in the plans. Each laboratory can be planned for one or more specific areas of home economics.

c. The laboratory for teaching foods and nutrition should have built-in unit kitchens. The enrollment determines the number of unit kitchens. One kitchen should be provided for each four pupils in a class. Each kitchen should include a double sink, range, a minimum of 8 linear feet of counter and storage space. Each unit kitchen should have approximately 15 linear feet -- dependent upon the shape of the unit kitchens. There is need for some storage space for general supplies, equipment, and furnishings.

d. The classroom and laboratory for textiles and clothing is additionally used for teaching several other areas of home economics. In addition to making provision for equipment and supplies related to textiles and clothing and other areas, it will be necessary to plan for a seating arrangement that will be suitable for class discussion.

e. A Living-Dining Area: A social area is desirable. This room should be adequate in size (approximately 16 ft. x 24 ft.) with an entrance from the hallway. This area should be used for conferences, serving dinners, coffees, teas, and other social activities.

f. Child Development Area: This unit may have kindergarten classes accessible to the home economics department or it may be adapted as

a play school for youngsters brought to school specifically for instructional purposes in child development classes. Facilities in this area should be designed to accommodate 6 to 10 children plus an equal number of high school students in both indoor and outdoor spaces. There should be room to store play equipment. Toilet facilities for children should be accessible.

g. Recommendations for Home Economics Departments: The space generally recommended by authorities for clothing and foods laboratories is approximately 1,500 square feet in addition to laundry and storage space. This will vary according to the enrollment for which the space is planned. The width of a home economics room should be no less than 24 feet; 28 feet makes for greater efficiency. The length of all-purpose rooms and laboratories will vary according to the anticipated enrollments for which the department is planned. A pantry is desirable for all kitchens. Adequate storage space should be planned for all rooms.

(1) Provision should be made for both gas and electric ranges.
(2) An adequate hot water system should be provided.
(3) A lavatory room is desirable.
(4) A fitting area in connection with each all-purpose room and clothing laboratory is essential.
(5) All rooms must be properly lighted, heated, ventilated, and screened.
(6) In all rooms adequate electrical outlets are essential.
(7) Traffic patterns must be considered in the planning.
(8) Efforts should be directed toward attaining a home-like appearance throughout the home economics department.

10. Industrial Arts

The Louisiana State Model for Industrial Arts curriculum structure defines industrial arts as exploratory activities designed to meet the following two major purposes:

a. To assist individuals in making informed and meaningful occupational choices in industry and technology. In order to accomplish or facilitate this purpose, industrial arts provides:

(1) Occupational information and instruction pertaining to a range of occupations including training prerequisites, working conditions, salaries or wages, and other relevant information.

(2) Exploratory experiences in laboratories and observation in business or industry to acquaint students with jobs in the occupations included in this purpose.

(3) Guidance and counseling for students to assist them in making meaningful and informed choices in their selection of occupational fields.

b. To prepare individuals for enrollment in advanced or highly skilled vocational and technical educational programs. In order to accomplish or facilitate this purpose industrial arts exploratory program provides:

(1) Individuals with occupational information and exploratory experiences to meet the specific requirements for enrollment in such programs.

(2) Occupational information and exploratory information directly related to current practices in industry.

(3) The Louisiana State Model for Industrial Arts designates programs recommended by the State Department of Education to accomplish the above purposes. These programs include construction, manufacturing, transportation, communications, American industries, materials and processes, visual communications, and power and energy. Where facilities and equipment presently exist, traditional industrial arts programs are also suggested but include power, metals, woods, plastics, drafting, electricity, electronics, graphic arts, and research and development.

Because the industrial arts facility is a specialized area and requires many technical details, it is suggested the school designer secure a copy of the American Council of Industrial Arts Supervisors', A Guide to Preparing Educational Specifications for Secondary Industrial Arts Facilities, and follow the procedures suggested in that publication. The publication may be secured from the State Supervisor of Industrial Arts at the Louisiana State Department of Education or the American Industrial Arts Association, 1201 Sixteenth Street, N.W., Washington, D.C. 20036.

11. Music Department

In order to have a comprehensive music program through participation by pupils at all grade levels, the school plant must provide adequate, flexible facilities particularly designed for music activities:

Musical activities include:

a. INSTRUMENTAL: Concert band, orchestra, string orchestra, marching band, stage band.

b. VOCAL: Mixed chorus, boys' chorus, girls' chorus, voice class.

c. SMALL GROUPS: Instrumental ensemble, vocal ensemble, solo, piano class.

d. CLASSROOM: General music, music appreciation, music theory.

It is most important to recognize initially in design planning that the needs of the music department are different from those of any other department in the school. Design considerations include the following:

a. The volume of sound is great, thus requiring careful attention to acoustics. To insure the isolation of the music unit from other sources of sound and to eliminate sound transmission to other instructional areas, the acoustical environment must be carefully engineered.

b. Year round climate control is essential. Air-conditioning, ventilation, heating and humidity control are important factors in musical performance and intonation. Illumination also presents special problems.

c. Valuable instruments and expensive uniforms are maintained in the school music department; therefore, facilities for storage and security must be provided.

d. Location: The music department should be, preferably, a separate self-contained building complete with offices, practice rooms, music library, rehearsal and recording rooms, storage rooms, instrument repair rooms, and toilet facilities. The music unit should be located adjacent to or in the area of the auditorium or stage, separated only by a corridor or covered walkway. It should have a direct outside entrance (double doors with clear opening) to allow the marching band to assemble outdoors for practice, athletic events and parades.

e. The flow of student traffic must be considered.

f. Large Instrumental Rehearsal Room: Size is usually determined by the number of pupils in the largest instrument group scheduled. At least 24 square feet of floor space per pupil should be provided. Bands or orchestras may range from 60 to 90 members or more.

Ceiling height should be at least 14 feet. Shape of the room may have a ratio approximately 3 to 2. One or more walls to be angled and non-parallel to enhance the acoustical environment.

Portable chairs can be used in the rehearsal hall. Risers, if used, should be 6" to 8" high and from 54" to 60" wide. The top riser should be 72" to 120" wide for larger instruments. Floors should be carpeted. Ample electrical outlets are needed. Provide limited fenestration, if any.

g. Vocal Rehearsal Room: This room should be designed to accommodate the largest group scheduled usually ranging from 60 to 100

members or more. About 16-18 square feet of floor space per pupil is desirable. The shape, ceiling height, risers, and design to be similar to the instrumental rehearsal room.

h. Music Classroom: The room should be larger than a regular classroom designed for 40 students and at least 24 square feet of floor space per pupil provided. Carpets and acoustic treatment are required. Equipment will include a piano, music playing and recording machines, music cabinet, desk, and chalkboard with section scored with staves.

i. Director's Office: Provide an office or studio space for each music instructor located so that visual supervision of rehearsal and practice room can be conveniently carried out.

j. Practice Rooms: The number of practice rooms depends on the size of the music department, usually two to four are needed. These rooms should be built in a suite arrangement near the main rehearsal rooms, air-conditioned and acoustically treated. Double glazed glass observation windows should be provided in the doors. Room size should be at least 8 ft. x 10 ft. with nonparallel walls. One room should be 12 ft. x 14 ft. for small ensemble.

k. Other Rooms: Space for storing band uniforms and choral group robes is necessary. Compartments for accessories and wardrobe cabinets with spaced garment hangers should be provided.

l. Music Library: A separate music library for vocal and instrumental music is recommended if funds are available. Minimum area about 200 sq. ft. and room located adjacent to or combined with the director's office.

m. Recording Room: A recording room is desirable to house the recording and playback equipment with electronic outlets to the main rehearsal room. A window is needed for visual observation.

n. Instrument Storage: A room should be provided for instrument storage when not in use. Also some space should be considered for minor instrument repair.

o. Restrooms: The music facilities are often used at night for rehearsal and after band and choral trips; restrooms for both boys and girls are definitely required.

12. Science

The size and kind of facilities for science will vary according to the size of the school. The four areas of science found in secondary schools include general science, biology, chemistry and physics. All science facilities should be centralized within the school. Science areas may be considered noisy or semi-noisy for location purposes.

The philosophy of teaching modern science lends itself to the concept of a need for a closer relationship between the lecture and the laboratory phases of science. This concept requires that science classrooms be designed to include the laboratory as part of the lecture room, typically equipped to provide both classroom and laboratory instruction in a single classroom-laboratory unit.

Today's methods of teaching science may call for experiments which last more than one class period, again lending impetus to the need for an integrated lab and lecture room.

A good layout for any science room is to place the laboratory tables along the perimeter walls of the classroom, allowing the teacher to supervise from any point in the room. The fixed service facilities located along perimeter walls or at 4-pupil islands in the central laboratory areas are equipped with water, gas, and electric utilities. Each laboratory station should be used by no more than two students at any time. Science rooms so designed need a minimum of 1,200 square feet or 40 square feet per pupil of floor space. Student desks can be placed in the front and center of the room. If discussion groups will emanate from the laboratory experiences, spaces for seminars adjacent to the science rooms are recommended.

The thermal environment is especially significant in science laboratories. The air exhaust system in the science rooms should be independent of and isolated from all other ventilation. Thermal control in special areas such as greenhouses and animal rooms requires special attention. Floors for laboratories present special problems and should be easy to maintain and resistant to acids and other spilled chemicals. There is also a need for proper placement of fire safety equipment and first aid supplies. Piping for laboratories where gas and/or corrosive wastes are involved present hazardous conditions requiring an engineering selection of the pipe, valves, and fittings.

a. General Science Facilities: The activities carried on in general science comprising study of the life, earth, and physical sciences are lectures, demonstrations, class discussions, and the use of audio-visual materials. Tables with chairs should be used since some experiments may be performed by the students. A demonstration desk with electrical outlets, sink and water, and a gas outlet are necessary. Storage is needed for equipment and supplies, teaching aids, etc. Carpeting should not be used in science areas. Chalkboard space and bulletin board space are required. Provide special areas for an aquarium, a terrarium, plants and animals. Also display areas for astronomy, geology, meteorology, and nature studies. These areas, with careful planning, may also be used by the biology class.

b. Biology Facilities: The biology space needs to be designed with experiment tables along the perimeter of the room equipped with sinks, water, electricity, and gas outlets. Tables, counters, and floors should be water resistant and easy to clean. A teacher demonstration desk located at the front of the room is recommended. Special attention should be given to the need for adequate illumination since dissecting and the use of microscopes are major activities requiring special lighting.

Appropriate space and location are required for items such as refrigerators, pressure cookers, hot plates or kitchen ranges, centrifuges, and a fume hood. Storage space is needed by students working on experiments. Storage space is also needed for the various materials, supplies, and equipment used in biology. At least 14 linear feet of chalkboard space is necessary as well as bulletin board space. A separate room of about 100 square feet is desirable for special plant projects in biology, complete with water resistant floor, hot and cold water, floor drain and service sink.

c. Chemistry: The overall design should be one which preferably has the laboratory desks around the perimeter of the room. Laboratory desks or islands should include sinks, water, gas and electrical outlets, shelves, and storage space. Table tops, sinks, and plumbing should be acid resistant. At least 14 linear feet of chalkboard space is needed in the chemistry room along with adequate bulletin board space to display certain materials. A teacher demonstration desk located at the front of the classroom and equipped with water, sink, electricity, and gas must be provided.

Storage space is needed both within the laboratory and in a storage room adjacent to the laboratory. Some storage cabinets are needed which resist corrosion and are ventilated.

To insure safety in the chemistry classroom, the following items or equipment are needed:

(1) Emergency shower bath
(2) Eye wash facility
(3) Fume hoods
(4) Fire extinguishers
(5) Blankets
(6) First aid supplies and equipment
(7) Cabinets with locks for storing chemicals
(8) Master control for utilities (gas, water, electricity)

d. Physics: Spaces for laboratory and class activities are essential. In general the laboratory should have large free working area and all utilities services available. Movable tables are used with utilities in service islands or a perimeter counter. One end of the room should contain the teacher's desk and a demonstration table.

For physics alone, as compared to other science areas, normal ventilation should be sufficient and an acid resisting floor would not be necessary. AC-DC electricity at variable voltages is needed utilizing portable or localized equipment. Compressed air and vacuum systems are needed for experiments at the demonstration station. Chalkboard work usually constitutes a considerable part of class time and about 24 ft. of chalkboard should be provided. To permit hanging of equipment an eye hook should be provided in the ceiling above the demonstration table and laboratory area.

A sound cable between the front and back of the room should be installed for projection purposes and antenna facilities for television and radio reception. Adequate storage for the vast amount of demonstration equipment and specialized apparatus must be provided. A small shop where electrical and mechanical repairs can be made is a desirable accessory space.

13. Special Education

Special education is concerned with the education of children having diverse exceptionalities which impede or, in the case of the exceptionally gifted, accelerate the learning process. Thoughtful control of the learning environment is essential to successful teaching for these children who require more individual attention and vastly more specialized equipment than is found in the regular academic program. Therefore, although the class sizes for exceptional children are vastly reduced by Act 368 of the Louisiana Legislature and subsequent action of the State Board of Education, classroom space equal in area to that required for classes of normal size is necessary to provide for the convenient use and storage of specialized equipment and for the more flexible arrangement of pupils in the instructional area. Fixed desk arrangements are not to be presupposed.

In addition, experience has indicated that classrooms for exceptional children should be located in schools of the same chronological age span for personal and social growth, and should be conveniently accessible to lavatories, the gymnasium, playgrounds, and other facilities used by these children. However, distracting environmental noises which may arise from gymnasiums, playgrounds, music rooms, and the surrounding neighborhood must be reduced to a minimum.

In their internal concept, classrooms should be designed with carefully chosen color schemes, acoustical engineering, adequate provision for lighting and electrical needs, and considerations for physical safety to provide a supportive learning environment. Emergency exits should be uncomplicated to find and use and be free of clutter at all times.

The instructional rooms for special education must conform to one of the three basic programs recognized in State law: self-contained classroom,

resource room, itinerant teacher. The resource room is defined as a room apart from the regular classroom wherein exceptional children are engaged in supplemental learning experiences for a scheduled portion of their school day. Rooms used by itinerant teachers and speech therapists should be devoted solely to the itinerant services when in use for this purpose. Self-contained classrooms or resource rooms need not be restricted to traditional models. Indeed, there is need for much flexibility in view of the additional requirements in furnishings and equipment. Open classroom team-teaching is becoming a more prevalent feature in special education, and the developmental, continuous-progress approach or entire school is used more and more.

There are specific instructional setting needs for each category of exceptionality enumerated in Act 368. These are noted as follows:

a. Educable mentally retarded children (EMR) form the largest proportion of exceptional children in Louisiana schools. Self-contained classrooms for pupils evaluated by competent authority as educable mentally retarded, whether in special schools for exceptional children or in regular schools for pupils of the same age span, must provide space, lighting, and ventilation for a maximum of 15 pupils per teacher and should be conveniently located within the total school facility wherever possible.

   The instructional area should be large enough to include work space with ample table and counter areas for separated activities not usually found in the regular academic curriculum. A built-in sink is virtually indispensable for the special education classroom. There should be easy access to washrooms, outdoor activity areas, and the gymnasium. Special education classrooms for all categories of exceptionality should provide immediately adjacent washrooms for boys and girls if located apart from the main school plant.

If vocational education is to be included in the instructional program there should be a minimum of 250 to 350 square feet of work space, plus ample room for the storage of additional appliances, tools, machinery, and other specialized equipment.

A layout to be considered for the self-contained special education facility is the modular, "open-walled" arrangement. As mentioned previously, the open concept allows for team-teaching. Good acoustical engineering prevents distraction. Kitchen and sewing areas can be provided in addition to a separately enclosed wood-working area.

b. Trainable mentally retarded (TMR) pupils (8-12 per teacher) require, in addition to the recommendations for the educable mentally retarded, washroom facilities immediately adjacent to their instructional areas. Simulated daily living skills environments are an important aspect of the instructional program for these children. Consequently, more space must be provided than is customary for traditional desk and table areas.

c. Physically impaired (PI, PH, OH) children (8-10 per teacher), when not in a homebound program, require ground level classrooms with ramps for wheelchair access. Lavatories must be designed to accommodate wheelchairs also, and be provided with sturdy handrails in necessary places. Outdoor play areas should be free of dangerous or frustrating obstructions.

d. Visually impaired (VI) children (10 pupils maximum per teacher) must have classrooms which effectively utilize both natural and artificial lighting. Different sight problems require different light levels, although there should be freedom from glare for all visually impaired children. Natural light should be indirect and evenly distributed. Provision for individual control of artificial lighting is recommended.

Professionally planned wall surfaces are of considerable importance for the partially sighted child. Textures of surfaces and objects are vital ingredients in the education of blind children. Indeed, textured safety routes may be advisable for speedy evacuation of school buildings. Audible fire alarms, of course, are absolutely essential.

e. Hearing impaired (HI) children (8-10 per teacher) have more basic language problems than do the visually impaired. All that has been said of proper lighting and wall coloring for the visually impaired as a means to reduce glare and shadow applies equally as well to the hearing impaired who must rely heavily upon visual cues in communication. Especially important is the installation of flasher lights on fire alarms and other signal devices.

   Sound-proofing may be essential to reduce distracting external noise. Acoustical ceilings and floor coverings are needed to reduce ambient noise to a tolerable level for the use of amplifying equipment which, unlike the human ear, is nonselective. A recommended level of ambient noise should not exceed 65 db (C-scale) or 55 db (A-scale).

f. Emotionally disturbed (ED) and learning disabled (LD) children (8-10 per teacher) require the greatest individualization in instructional procedures, with the exception of the deaf/blind. The optimum time spent in group work and in individual study or "cooling off" will vary for each pupil and in a developmental pattern. Freedom from distraction must be provided for all children in these two categories, and, therefore, classrooms should be of sufficient size for simultaneous group and individual work, including the provision of acoustically designed study carrels. Carrels and open room areas are best equipped with rheostatic light controls.

It is recommended further that windows be located well above eye level to eliminate external distraction, with interior wall surfaces adaptable for controlled sensory stimulation. Storage closets are useful to prevent distraction by keeping unused equipment and supplies away from view. Adequate climate control is especially to be considered in planning for a successful learning environment which will stimulate academic performance in the emotionally disturbed and/or learning disabled.

Many disasters in the renovation of existing structures for special education purposes and new construction for special education can be avoided when full communication in planning exists among school authorities, teachers, and the architects.

B. AREAS FOR USE OF ALL STUDENTS

1. Auditorium

The school auditorium serves as a gathering place for assemblies. It is used as a theatre, a laboratory for the performing arts, visiting speakers, graduation ceremonies, and for community activities.

In lower elementary and middle schools the stage is all-important and a large occupancy area is not necessary. It is satisfactory to employ a combination of cafeteria and assembly area often called "cafetorium". The combination auditorium-gymnasium should be avoided. For secondary schools auditoriums are essential and should be included in all facilities planning.

The auditorium should be located on the ground floor with adequate, well-spaced and well-designed means of egress directly to the outside. It should be planned for evening use of the public without the necessity of opening the entire building and have access to parking space. Relative to the school program, the auditorium should be located in proximity to the music and drama rooms. Consideration should also be given to special zoning of heating and air-conditioning and minimizing sound interferences.

Flexibility in auditorium spaces is often desirable for multi-purpose uses and soundproof curtains, operable or movable partitions, are utilized to separate the stage and seating areas.

The school auditorium is usually sized to handle from one-third to two-thirds of the pupil population with 300 to 800 seating capacity. For preliminary studies 7 square feet of floor space per seat may be used.

The number and arrangement of fixed seats, aisles and cross aisles must conform to the Fire Marshal's requirements and local ordinances. Balconies and stairs should be avoided.

The following are important considerations in design of the auditorium:

a. Stage: The "proscenium" type stage arrangement is formally divided into the following areas:

(1) Forestage or Apron: Space in front of the curtain and proscenium.

(2) Backstage: Space behind the proscenium.

(3) Offstage or Wings: Space on either side of the backstage.

The "platform" type stage is similar to the proscenium except the stage projects into the audience. Other type stages are "open" and "arena" where the actors are surrounded by the audience.

The stage should be of ample size; a minimum depth of 24 feet and minimum proscenium opening of 24 feet. Proscenium height 18 to 20 feet and offstage wings on each side 12 to 20 feet. Height of stage about 43 inches above floor of the seating area. For larger school auditorium stages the minimum stage depth should be 30 or more feet and offstage wings at least 20 feet. The ceiling of the stage should be about 26 feet above the stage floor.

The stage apron in front of the curtain should be kept at minimum depth, as a wide apron increases the distance of the audience from the activities on the stage. The proscenium opening must have a flame-proof curtain.

Provision must be made for adequate stage lighting and signaling. Spotlights and floodlights provided for in the ceiling and in the wall in front of the stage, and controlled

from stage panels, prove a much better source of face lighting than footlights. Provision should be made, wherever feasible, for projection of sound and sound movies on the stage.

The stage floor should be of soft wood, preferably kiln-dried pine, which will not splinter when sets are secured with nails or screws.

b. Interior Finish: A sloped floor is desirable for good viewing by the audience. The floor covering should be a non-slip type, preferably carpet. Windows cannot be justified because of heat losses and difficulty with lighting and acoustics.

The auditorium should be free of columns from the floor. Every effort should be made to consider the stage as the focal point and to treat the walls and ceilings (lighting and acoustics) so as to focus attention on the stage and not compete with it.

c. Acoustics: Transmission of sound presents one of the most serious problems encountered in auditorium design. An acoustical engineering consultant should be employed for it is of prime importance that performers have the proper reverberation of voice or music for tonal richness. There should be a balance of sound obtained from the proper relationship of spaces and use of softening or porous materials. Offset ceiling planes, sawtooth walls, and nonparallel walls are used to absorb and direct sound waves. The effects of mechanical equipment on sound must not be overlooked.

d. Lighting: In the seating area the lighting provided should be soft, even, and devoid of glare. Controls should be provided on the stage, at the lecture area, the projection booth, and for side-wall and ceiling-mounted lights.

e. Auxiliary Rooms: Two dressing rooms located at stage level should be provided; equipped with benches, costume racks, and lavatories with hot and cold water.

A ticket office and wrap-check space in conjunction with the lobby is a necessity if the auditorium is to function properly for school and community assemblies.

It is almost inevitable that a school will feel the need sooner or later for a concession space, and it is well to consider this need in early planning. The lunchroom placed adjacent to the auditorium may be used very satisfactorily for this purpose.

Toilet facilities must be provided for public use. They may be separate facilities, or two school toilet rooms may be made available without opening the entire school building to the public.

A telephone booth should be provided for in the lobby.

A projection booth, when required, should be provided on the central axis of the auditorium in a position so as not to interfere with the comfort and the sight line from any seat. (Note: Design must comply with Fire Marshal Regulations.)

2. Gymnasium

The gymnasium is the core of the indoor physical education program and serves as the basic teaching area. In physical and health education, as in any other class, the emphasis is on the individual's development today and care should be taken to provide for such activities and corrective exercises as will serve all the students. The gymnasium should be provided with the same lobby facilities as the auditorium; e.g., lobby, concession space, ticket booth, and public toilets. Most schools will require provision for the display of school athletic trophies where the public may see them.

a. Size: If the school is to enter official competition, the official basketball court will give a starting minimum size to work from. The official court for playing basketball exhibition games for junior high and senior high schools is 50 ft. x 84 ft. Recommended clearances between court and bleachers or wall are 6 feet for sides and ends, with a minimum of 4 feet for each. Provision for seating half the school population is generally sufficient. The most economical seating can be provided with folding bleachers.

b. Aside from the official court, the determining factor of the gymnasium size is the number of required teaching stations to adequately serve in the instruction and supervision of physical training for the entire school. Teaching stations can be provided by a motor-driven, floor-to-ceiling, movable partition dividing the main gymnasium into two equal parts. If these two areas are not sufficient space, it is possible to provide the other needed teaching stations with one or more auxiliary rooms; in rare cases, another gymnasium may be provided.

c. Multi-Purpose Room: The most used auxiliary teaching room is the multi-purpose room which requires no seating accommodations. It should be about 30' x 50' x 16' and should provide areas for tumbling, wrestling, judo, and storage of mats and gym apparatus. When these activities are carried on in the gymnasium, proper storage for the mats and apparatus should be provided for in the equipment storage room.

d. Remedial Room: The remedial room used for special assignments and corrective exercises may be of standard classroom size. Tackboards, chalkboards, and storage spaces should be provided, making this room usable as a classroom.

e. Classroom: A physical education classroom need not be a special room. A standard classroom will serve the purpose.

f. Equipment Storage Room: Inadequate gymnasium storage space inevitably creates many problems for teachers and maintenance personnel alike. Equipment stored on the gymnasium floor occupies space designed for activity, resulting in misuse of space. The danger of body contact and student injury noticeably restricts activity. Expensive gymnastic equipment can become a serious liability when left available for unsupervised student use. In addition, equipment stored in the gymnasium creates a maintenance problem. Such an area becomes a catch-all for litterbugs and is difficult to clean. Provision should be made for storing the gymnasium's piano, a necessary feature that is usually overlooked. The piano should have a place in the storeroom or in a protected corner of the gymnasium. Movable trucks to hold gym mats are very satisfactory. A good, durable, non-slip floor is necessary in the storage room. Recommendations for gymnasium storage are based on several factors.

Each gymnasium teaching station must have access to storage which can adequately house its movable equipment. The quantity and size of all items to be stored and necessary access aisles determine the total area required. Storage of large pieces of movable equipment must be safe and quick with easy accessibility. Aisle locations must permit maneuverability. Adequate storage space eliminates damage, minimizes maintenance problems, and aids effective utilization. Entrance doors to the storage room should be a minimum of six feet wide and eight feet high.

g. Floor: As new materials are constantly being developed for flooring, a careful study should be made of what is available before finally deciding on the product.

Factors to consider are location, use, moisture resistance, guarantee against warping, non-floating characteristics, holding power of floor plates, and floor strength. Floor plates should resist an upward minimum pull of 5,000 pounds. For adequate securing and holding power between the floor and concrete slab, concrete of 3,000 psi (pounds per square inch [strength capacity]) minimum is required; concrete testing at 4,000 psi is recommended. Top quality floor finishes minimize maintenance and reduce moisture penetration on the playing surface.

The gymnasium floor should be resilient and non-slip. Hardwood flooring over subfloor and sleepers is very good, but gran-wood flooring is fast becoming the best choice in gymnasium flooring. If the budget is very limited a good serviceable floor may be a concrete slab. Floors should be provided with subfloor ventilation and expansion joints at all walls. This joint should be provided with a right angle metal base to cover the expansion space and to protect the wall from heavy equipment.

h. Swimming Pool: A swimming pool can provide better exercise for more people in a shorter period of time than can a gymnasium or exercise room. Because of its tremendous capacity, the swimming pool, which is generally considered a luxury, should have full consideration. The American Association of School Administrators suggests use of non-competitive, constant-depth pool (42 to 46 inches) as an economical swimming pool since exercise and swimming instruction should be the prime purpose of a school pool. The municipal pool can be used for competition. For inter-scholastic competition, a pool should be 25 yards long and should provide from four to six lanes 7 feet wide.

i. Locker, Shower, and Toilet Facilities: The locker room size will be determined by the number of pupils in the school, since a gym clothes locker is provided for every pupil in the school and enough dressing lockers should be provided for the largest gym class. Good circulation of air through the lockers and provision for floor cleaning under the lockers are of prime importance. It is well to plan for installing 10 percent additional lockers to allow for flexibility in class sizes and school enrollment.

Recommended minimums for storage lockers for gymnasium clothes, in order of preference of sizes; are 7 1/2" x 12" x 24", 6" x 12" x 36", 7 1/2" x 12" x 8". Lockers for street clothes (or dressing lockers) should be larger: 12" x 12" x 72" for secondary schools and 12" x 12" x 54" or 12" x 12" x 48" for elementary schools.

Locker rooms should be adequately ventilated and lighted. Whenever possible, sunlight should be allowed to enter the locker rooms in such a way as to shine down between the rows of lockers.

Toweling areas, equal to shower areas, should be provided between the showers and the lockers or dressing rooms to keep the locker rooms as dry as possible. Gang showers are recommended for boys and for girls, with one shower head for every four pupils in the class. Twelve square feet of floor area is adequate for each shower head in the shower room. Along with the group showers for girls, one to three individual shower stalls (3' x 3' x 6') should be provided.

Toilet facilities in the locker room suite (based on peak loads) should be provided as follows:

Toilets	1 for each 30 girls	minimum 3
Toilets	1 for each 60 boys	minimum 2
Urinals	1 for each 25 boys	minimum 2
Lavatories	1 for each 40 boys & girls	minimum 3

j. Instructors' Suite: The boys' and girls' physical education facilities should each contain the following facilities for the teachers: office space, lockers, and shower facilities. The logical place for this suite or room is at a point of control near the locker room, shower and toweling room, storage or equipment room, and the outdoor recreational areas. Teachers should be consulted as to the proper placement of office in relation to student lockers and dressing areas.

k. The Combination Gymnasium-Auditorium: Two such dissimilar activities as a stage performance and a basketball game can never share the same space happily. If combined in one room, neither activity will be conveniently served. The best combination is to plan the gymnasium with the auditorium facilities secondary and temporary, with future plans for an auditorium building. Plans should be made to combine auxiliary elements to ultimately serve both buildings efficiently.

Aside from the fact that the seating on a gym floor can never be satisfactory for stage entertainment, these seats present a large storage problem. Such storage should be planned to facilitate the moving of chairs in and out to change the room from one use to another. With careful planning, the area beneath the stage may be used for storing chairs. The chairs used to seat an audience should be designed to clip together in rows to prevent "panic hazards." Acoustical treatment of this multiple use requires expert attention.

The heating and cooling system for the gymnasium-auditorium must be flexible to provide the proper temperature and ventilation for physical education and still operate for comfort when the building is used as an auditorium.

Gymnasium walls can be used for instructional purposes in developing skill techniques and for playing surfaces. If gymnasium wall areas are rendered non-playable by capacity spectator seating; however, then the school's emphasis on spectator sports has been at the expense of the instructional program. Studies indicate bleacher use at approximately six percent of the operational time of the gymnasium. Such limited utilization must be evaluated by planner in terms of overall educational objectives.

Failure to coordinate the installation of bleachers with instructional use of walls greatly reduces the effectiveness of the gymnasium as an educational facility. Proper balance will satisfy the needs of athletics while meeting the basic requirements of the instructional program.

1. Play Space: In the elementary school the play space (dependent on the size and needs of the school) can be anything from a gymnasium to a large classroom, or it may be two standard classrooms combined by opening a sliding or folding partition.

It is suggested by the National Council on Schoolhouse Construction that heights, though relative to the size of the room, should be 16 feet to 18 feet for active games.

It is not always true that if the elementary school can afford it, they should have a full-sized gymnasium. A well-equipped play room, devoted to maximum use by the whole school and the community, is more to be desired than elaborate facilities.

m. Table of Gymnasium Sizes and Types:

TYPE	A	B	C	D	E	F	G	H	I	J	CEILING HT.
I	80'	50'	74'	42'	4'	4'	4'	4'	0	0	20'
II	90'	65'	84'	50'	8'	8'	4'	6'	0	12'	22'
III	102'	65'	90'	45'	6'	6'	4'	6'	0	8'2"	22'
IV	96'	76'	84'	50'	6'	6'	4'	6'	0	15'7"	22'
V	100'	93'2"	84'	50'	6'	6'	6'	6'	15'7"	15'7"	22'
VI	104'	104'	84'	50'	10'	10'	6'	6'	24'	24'	24'
*VII	133'6"	96'	50'	84'	6'	6'	6'	6'	35'9"	35'9"	24'

*Game court and two teaching station courts run across the long dimension.

n. Number and Size of Teaching Stations: Approximate seating number tiers type (provided by movable partition--with folding bleachers) of seating:

TYPE					
I	2-50'	x	40'	0	0
II	2-65'	x	45'	325	7
III	2-65'	x	51'	265	5
IV	2-76'	x	48'	500	9
V	2-92'1"	x	50'	1,000	9
VI	2-52'	x	104'	1,500	14
VII	2-96'	x	66'9"	2,500	20

No. I - Recommended for elementary schools.
No. II - Recommended for junior high schools.
No. III - Recommended for high school girls.

Official court for exhibition games is located in the center of the gymnasium, at a right angle to the length axis.

3. Library and Media Center

All schools should be designed to include a centralized library as an integral part of the instructional programs at both the elementary and secondary levels. The library may be offered as an instructional materials center, a learning resource center, a center for independent study, and a center for utilization of audio-visual media. The modern library embraces all types of media, meaning print and non-print forms of communication and their accompanying technology, necessary for providing multi-services to all school personnel.

a. Location

(1) A central location is necessary to make the library accessible to all classrooms.

(2) The center should be in a location with a pleasing view avoiding noisy areas, service entrances, parking lots, and bus loading zones.

b. Components of a School Library: The library unit should include:

(1) Main reading room.

(2) Conference room, clas oom or seminar room adjoining the main reading room for instruction, group work, and discussion.

(3) Workroom storage areas for the organization, production, and processing of materials.

(4) Storage areas for supplies, equipment, and other materials.

(5) Space for viewing and listening.

(6) The librarian's office.

(7) A professional library.

c. The Main Reading Room: The reading areas which house the basic materials collection should be designed so that supervision is easily maintained. The main reading room should accommodate approximately 30 percent of the school pupil enrollment, allowing approximately 25 to 40 square feet per reader.

In determining the amount of floor space needed for book collections a rule of thumb that may be followed is that one square foot of floor space will house 15 volumes. For example, an ultimate collection of 15,000 volumes should be allotted 1,000 square feet of floor space.

In the internal planning of the library, consideration must be given to acoustics and lighting, arrangement of shelving, ample space for class work and suitable furniture and furnishings.

Standard library equipment should be used and the features to be considered include:

(1) Reading tables and carrels of various heights and designs so arranged that the readers will not face the source of unshielded light. Chairs should be strong and simple in design, with sizes to fit the different class divisions. Provision may be made for informal reading and for storytelling in the elementary school library. Shelving should be arranged along walls or throughout the reading room and should not exceed 5 feet 6 inches in height for elementary grades and 7 feet for secondary grades. The bottom shelf should be at least 4 inches from the floor and should be slanted so as to make the titles more legible. Special shelving should be provided for large volumes (reference books and picture books), for magazines (slanted type), and for display purposes. There should be no projecting trim or facing.

To determine the book capacity of a shelf, plan for shelves to be no more than 1/3 full when the library is new. This leaves enough room to double the book collection and still have 1/3 of the shelf space open. Book shelves should never be more than 2/3 full. Ninety percent of the shelves should be 8 inches in width, with the other 10 percent of the shelves 10 inches in width. Furniture should be of the appropriate size for the students being served.

A space of approximately 5 feet should be left between the face of a book stack and the edges of adjacent tables. Stacks should be spaced 4 feet 6 inches apart measured from center to center of columns. The main reading room should have limited window areas and controlled lighting.

Individual study carrels should be in the main reading room accessible to all students and near to the source of the materials. Carrels for reading and writing only (dry carrels) and some equipped for use of electrical learning equipment and audio-visual use (wet carrels) should be located throughout the library as needed. Good quality floor carpeting is essential to reduce noise.

d. Conference Room, Classroom, or Seminar Room: The conference room should be separated from the main reading room by a partially glazed partition to allow for easy supervision. Larger schools may require two or more conference rooms (130-150 square feet recommended for each) with movable walls or folding doors to allow for combining areas. Electrical and television outlets should be provided.

e. Workroom-Storage Area: Each school library should include at least one combination workroom-storage area which may serve as the center

for processing and production of materials, storage area for back files or magazines, multiple copies of supplementary and other printed materials, audio-visual materials and equipment, and all types of needed supplies. Ample space should also be provided to meet the future expansion needs of the school. A master control for "wet carrels" should be located in the workroom. The workroom should have a minimum of 240 square feet.

The work-conference area should adjoin the main reading room with partially glazed partitions to allow the librarian full view of the reading room. It is desirable to have an exit to the corridor from the work-production area.

Work counters, enclosed cabinets, and hot and cold water should be provided. If centrally located these facilities can serve the entire work-production areas. Numerous and accessible heavy duty electrical outlets should be provided for the various pieces of equipment.

Climate control for ventilation, heating, and lighting are essential in this area. Temperature control for areas where materials such as films, tapes, and recordings are housed is a necessity.

f. Audio-Visual Facilities: Even where the school provides a separate viewing and listening center, it is desirable that there be some space and equipment in the library for group participation. Conference rooms may serve this purpose. Special equipment such as mobile phonocarts, disc and tape players with earphone attachments make it possible for listening and viewing to be done in the reading area.

g. Librarian's Office: This office should be adequate in size to house a desk, chair, filing cabinet, and typewriter. The office space should be approximately 100 square feet.

The seminar rooms or conference rooms should be approximately 150 square feet. Each room should have a glass window for supervision and should be furnished with a table, chairs, and adequate electrical outlets.

h. Professional Library: Provisions should be made for an area to house the teachers' professional library. It is desirable to locate this area adjacent to the main reading room and it should be partially enclosed with no view from corridor or reading room. Ample space should be provided, approximately 240-600 square feet. The charging desk is located convenient to the librarian's office.

4. School Food Services

This facility planning guide has been developed to assist school administrators and architects in designing school food service plants in Louisiana. The prevailing type of food service is the Type "A" plate meal or a variation of this meal pattern.

For planning and equipping details beyond the scope of this guide see A Guide for Planning and Equipping School Lunch Rooms, PA 292, United States Department of Agriculture, Agriculture Marketing Service (Government Printing Office, Washington, D. C.) or contact State of Louisiana, Department of Education, School Food Services Section, Baton Rouge, Louisiana 70804.

a. Basic areas considered for a school food service facility are as follows:

(1) Receiving

(a) Outside
(b) Inside

(2) Food Storage

(3) Nonfood Storage

(4) Food Preparation (Kitchen)

(5) Serving

(6) Dining

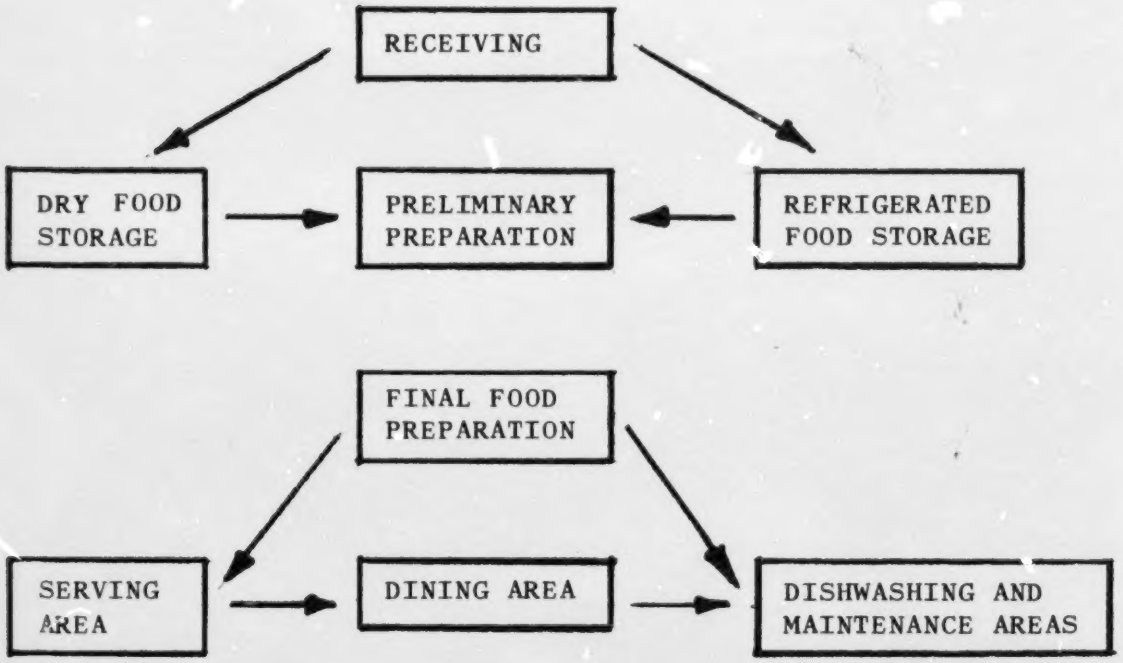
(7) Dishwashing

(8) Maintenance

(9) Office and Employee Facilities

b. General Arrangement

The relation of the general work areas to each other is considered a "layout." The facility should be planned to permit the flow of work in a straight line as in assembly line production. This can be illustrated by a Flow Chart:



c. Summary of Basic Area

To assist in preliminary planning of school food service facilities, a table of approximate space allocations in terms of total meals served is given below: Table 1 printed from the Layout, Equipment, and Work Methods for School Lunch Kitchens and Serving Lines, Marketing Research Report No. 753, United States Department of Agriculture, Agriculture Research Service, (Government Printing Office, Washington, D. C.) issued 1966..

TABLE 1 - - -Space recommended for 3 sizes of school lunch operations

AREA	350-500 meals per day (200 seats)		700-1,000 meals per day (380-420 seats)		1,400-2,000 meals per day (550-600 seats)	
	Total	Per Meal (range)	Total	Per Meal (range)	Total	Per Meal (range)
	Sq. ft.	Sq. ft.	Sq. ft.	Sq. ft.	Sq. ft.	Sq. ft.
Kitchen and serving: Food preparation, including refrigeration	540	1.5-1.1	980	1.4-1.0	1,470	1.0-0.7
Serving.....	200	.6- .4	620	.9- .6	1,100	.8- .6
Dishwashing.....	150	.4- .3	220	.3- .2	280	.2- .1
Food Storage.....	230	.7- .5	460	.7- .5	800	.6- .4
Nonfood storage.....	70	.2- .1	70	.1- .1	120	.1- .1
Office, employees' dressing room, and rear hallway....	160	.5- .3	250	.3- .2	430	.3- .2
Total.....	1,350	3.9-2.7	2,600	3.7-2.6	4,200	3.0-2.1
Receiving dock and waste-holding.....	70	.....	80	.....	200	.....
Lunchroom.....	2,000	.....	3,800	.....	5,500	.....
Per seat	10	.....	9-10	.....	9-10	.....

d. Outside loading platforms should be located easily accessible to delivery trucks away from playgrounds and student traffic. A separate service and turning drive should be provided. The dock of the platform should be at truck bed height, free of steps to kitchen and receiving areas. It should be 6 feet deep and covered. Roof should be approximately 13 feet above driveway. (See Table 1 for space suggestions).

e. The receiving or checking space should be located inside, separate from kitchen and storeroom. It may also serve as a hallway. Heavy duty doors between loading platform and receiving area provided with self-closing, locking devices, and kick plates are recommended. A door with a minimum clear opening of 42 inches in width is needed. It is suggested from 50 to 10 square feet, excluding passageway, be allowed for receiving supplies.

f. Dry food storage should be conveniently located to the receiving area and manager's office, accessible from the food preparation area. Allow 0.5 to 1 square foot of floor space per meal served, based on 2 weeks' supply of food.

Heavy-duty door is needed at least 40 inches wide. The door should lock from outside but can be opened from inside without key. Windows are not necessary unless required by state and local regulations.

Good ventilation is essential to keep food from 50 degrees - 70 degrees F. Natural ventilation can be obtained by constructing the storeroom with louvers at floor level and the escape of warm air through louvers at the ceiling or roof level.

Mechanical or forced-air ventilation with intake and exhaust fans keep fresh air circulating. This area should be free from heat producing devices such as uninsulated pipes, water heaters, and condensing units for refrigeration equipment.

Shelving should be substantial, wood or metal, adjustable and well braced. The maximum height is 7 feet 6 inches. Allow 1 to 2 inches clearance from all walls for cleaning and air circulation. Only 25-30% of storage space should be provided in shelving, allowing ample space for portable storage racks, skids and dollies for storing cases, bags, etc.

The first shelf should be 40 inches above the floor and from 18 to 20 inches deep to allow for storing food in metal containers on dollies.

Aisles should be at least 42 inches wherever dollies and skids are used.

Nonfood storage space for storing various cleaning supplies, insecticides and paper goods should be provided. This area should be separate from dry food storage area and the mop closet but near the receiving area.

Refrigerated and Frozen Food Storage: Two types of refrigerated storage space needed:

(1) Normal - temperature from 32 degrees to 50 degrees F.

(2) Frozen food storage maintained at 0 degrees F or below.

This space should be convenient to the receiving area and adjacent to food preparation. Pass-thru, reach-in refrigerators between kitchen preparation and serving area are highly desirable.

Approximately 1/4 to 1/3 cubic feet per meal served for normal refrigeration and the same for frozen food has been estimated to be sufficient. Many factors such as frequency of deliveries, amount of convenience foods used and volume of food handled all affect the space needed.

Walk-in refrigerators and freezers are desirable whenever feeding over 300. Minimum size of 8 feet by 10 feet to allow for two storage areas and an aisle of 42 inches is recommended. Doors should be 42 inches wide. Walk-ins should be flush with floor to allow for mobile equipment. Metal, removable, adjustable shelving for easy cleaning and efficient utilization of space is highly desirable. A floor drain should be provided outside for cleaning and condensate.

g. The food preparation area should be adjacent to receiving, dining, and serving areas and easily accessible to food storage. Refer to Table 1 for suggested space allowance.

Rectangular kitchens provide an efficient use of space. The length should not be more than the width.

The "layout" of the kitchen preparation equipment should be arranged in work centers in a straight-line or assembly flow. Such centers are for cooking, baking, vegetable and salad preparation and pot and pan clean-up. Cooking equipment may be positioned along the wall or in an "island" arrangement. An "island" arrangement near the center of the kitchen is usually favored because of its relationship to preparation units, shortened distances to serving area and ease of cleaning. Cooking equipment should have 18 inches clearance for cleaning and tall equipment 12 inches from ceiling. Tables and sinks need 6 inches. Arrange working direction of equipment in a right to left movement for convenience.

Aisle allowances should range from 3-1/2 feet to 4 feet. A minimum of 4 feet for traffic aisles for portable equipment is essential.

Maximum selection of portable and vertical storage equipment allows for more compact kitchens.

Kitchen area should be mechanically ventilated or air-conditioned. If mechanically ventilated, the equipment should provide at least 20 air changes per hour.

A hood or overhead canopy which overhangs the cooking equipment area on all sides is required. The hood should be equipped with removable, washable filters, and vapor-proof lights. The hood should supply an inlet capacity of 100 CFM per square foot at the bottom edge of the hood. Exhaust fans should be furnished with sealed bearings. Hoods be equipped with automatic fire extinguishing systems. These units to be complete with fuel shut-off valves.

Employee handwashing facility including soap and towel dispensers be provided in a convenient place in the kitchen preparation area.

h. The serving area should be adjacent to the kitchen and dining areas. If the dining area is used for other activities, the serving area should be closed off with lockable doors. Should the serving counter be a part of the kitchen, locating reach-thru refrigerators or tables will block the view.

Serving counters vary from 16 feet to 24 feet long. Counter design will be determined by meal pattern and type of service. The number of counters depends on total meals served and seating capacity of dining room. In general, the ratio is one counter for 200-250 dining room seats. Two counters are necessary if there are more than 300 seats.

i. The dining area will be determined by the number of students to be fed at one time. The seating capacity is affected by: type of lunch period (single, multiple, or continuous lunch periods); seating time; style of service; total enrollment; entry rate; and other related factors. These factors must be

identified and decisions made before the seating capacity can be determined. The number of seats needed would be approximately one-half the number of meals served.

The dining area should be colorful, attractive, and well lighted. For relaxed and enjoyable dining, air-conditioning is highly desirable. A bulletin board be located near entrance for posting menus and other pertinent information.

A student handwashing facility with hot and cold water supply, soap and towel dispensers is recommended. It should be located near the entrance to dining area.

A cold water fountain located for the convenience of the student is desirable.

j. Dishwashing Area.

Dish return arrangements include: the walk-off adjacent to kitchen and dining room; remote walk-off at rear of dining room or conveyor belt. It should be located near exit from dining room to corridor or the outdoors. must be located to prevent cross traffic of incoming students. If students scrap their own trays, dish return windows must be 6 or more feet wide to allow for several students to deposit refuse. The number of refuse openings depends on the method of sorting. Refuse openings must be adjusted to the height of students and located 6 inches from edge of dish table.

The dishwashing area must include space for pre-rinsing either mechanically operated pre-wash, disposal unit, or a pre-rinse sink. The space needed for the dishwashing area will be affected by the size of the dishmachine.

Adequate ventilation in the area by a direct flue connection from the dishmachine is more effective than a vented hood.

k. Office Area and Employee Facilities

Manager's Office should be located near the receiving area with a view of the entire kitchen. At least 60 square feet is needed to provide space for office equipment.

Employee facilities should include locker space of approximately 3.5 square feet of floor area for each employee. A toilet facility of approximately 60 square feet for a facility serving 500 meals, up to 160 square feet for 1400 meals. This area should be located near the service entrance, well lighted and adequately ventilated. Toilet rooms shall be completely enclosed and shall have tight-fitting, self-closing doors that shall not open directly into food preparation and serving areas. Refer to Louisiana State Board of Health, Sanitary Code of Louisiana for detailed requirements.

The maintenance area shall be located near service entrance. Garbage and trash areas should open onto loading dock, mop closet to receiving area.

Refuse Area: reduce or omit if food disposers and incinerators are available. Space requirement will be determined by several factors: number of pick-ups, type or types of refuse containers used and availability of compactors. An enclosed area with protection from insects and animals is essential, preferably refrigerated. Can-washer equipped with hot and cold water with hose connection is needed. Clean garbage can rack needed.

Mop closet should open into receiving area equipped with hanging racks for mops and brooms, shelves for cleaning materials and storage area for mopping equipment. A mop sink with drain suggested. Good ventilation and light required for adequate air drying of mops and elimination of odors.

1. Special consideration be given if facility will be used as a central kitchen, satelliting food to other schools.

   (1) Adaptations for a Central Kitchen

      (a) Additional space for storing food supplies and portable food equipment. Also space for loading and cleaning portable food containers must be provided. The amount of space required will be determined by the type of delivery system selected.

      (b) Truck loading area sufficient for the type of delivery system.

      (c) Additional food preparation space and equipment for extra meals including area needed for filling food containers.

   (2) Adaptations for Satellite School

      (a) Truck unloading area adequate for type of delivery system.

      (b) Dishwashing facilities.

      (c) Storage space for paper goods and cleaning supplies.

      (d) Refrigerator for holding salads and cold desserts.

      (e) Serving equipment, including milk storage refrigerator. In some cases the same mobile units are used to transport and serve food.

      (f) Manager's desk for the necessary accounting procedures.

      (g) Employees' lockers and toilets.

      (h) Garbage collection and can-washing area, or incinerator.

5. School Guidance and Counseling

Educators generally agree that guidance services are an integral part of the total educational program. In order for these services to function effectively, it is essential that adequate physical facilities be provided.

It is important to relate function to facilities in preliminary planning for guidance space. Basic to this translation is the need to provide some definite characteristics of guidance philosophy and practice.

The concept of guidance in current philosophy and practice includes guidance as a point of view, as a developmental process, and as as organized set of services which are coordinated and identifiable toward definite educational objectives under professional leadership. Activities are centered on the needs and problems of the individual student and are continuous in nature.

a. Organized guidance services and activities require adequate physical facilities. Among these are the following:

(1) Counseling Service: The function of the counseling service is to provide professional assistance on an individual basis to all students in assessing their potential and needs, in helping them make appropriate occupational and educational choices and plans, and in helping them develop an increasing maturity of judgment in dealing with problems of a personal nature.

(2) Informational Service: The function of the information service is to make available to students and teachers information covering educational and occupational opportunities and requirements as well as information dealing with personal and social adjustments.

(3) Appraisal Service: The function of the appraisal service is to make available to students, counselors, teachers, and related school personnel, pertinent information concerning individual students to the end that the individual may achieve better self-understanding. This information includes such cumulative data as home and family environment, leisure time activities, cocurricular activities, educational and vocational plans, and results obtained from standardized tests and measurements.

(4) Consulting Services: The function of the consulting service is to provide a mutual communication of information among professional persons who are directly related to, and charged with, responsibility in the development of the individual student.

(5) Research Service: The function of the research service is to provide significant findings pertaining to developmental aspects of the guidance program, and to evaluate the total guidance process.

b. Planning Guidance Facilities: Preconceived, detailed plans are likely to stereotype the design of guidance facilities. Plans which have been designed for a given program of guidance services in one school may not be adapted functionally to the program of guidance in another. It is better, therefore, for each school to develop its own plan for guidance facilities. This may best be done, initially, by using some type of "diagrammatic scheme." A basic diagrammatic scheme shows the preliminary planning stage which indicates the relationship of the guidance area to other areas within the building, such as the administration area and public accesses. Another scheme would show the guidance area itself worked out in more detail and showing the pattern of schematic arrangement which may be devised for the various units within the guidance area, and the location of this area with reference to related educational services.

These schemes should be developed cooperatively by the architect and planning committee in the beginning stage of the planning process. From such diagrammatic schemes, the architect then can use his own imagination and skill to provide a guidance area which will incorporate the relationships shown by the scheme.

It should be emphasized that each school should work out its own diagrammatic scheme. In devising the scheme, such things as the size of the school, the philosophy of guidance, the extent of the guidance program, and the supplemental services which are considered a part of the guidance services will need to be taken into account.

c. Areas Determined by Use and Equipment: The establishment of room size in precise terms, such as number of square feet, or specific length and width, does not allow for flexibility in architectural planning. It is better that the architect be supplied with information pertaining to the functions of each unit within the guidance area, the number of persons who will likely be using the units of the area, the equipment needed to carry on activities within the area, and desirable access routes. From these data, the architect can plan a room or rooms of sufficient size to provide effectively for such functions.

A checklist or other device, describing briefly the use of the area and the equipment it will need to contain, would be most helpful to the architect.

(1) Waiting Area: The waiting area is provided as a reception area, as an informational resource area, and as a place for students and others to wait for their appointments with the counselors. This room should be sufficiently large to provide space for a

secretary-receptionist and for one student for each counselor available. In addition, there should be space available for three or four additional persons such as parents or teachers who might be accompanying the student. Thus, for a school which has three counselors, waiting space should be provided for about seven or eight persons.

In order to provide a smoother flow of traffic, and also to minimize possible embarrassment to those students who appear to have experienced an emotional disturbance during the counseling interview, it is desirable that exits other than through the waiting area be provided for students leaving counseling offices.

(2) Counselors' Offices: The counselor's office is the setting for the interview. There should be an office for each counselor. The interview usually involves only the counselor and the student. However, at times other persons such as a teacher, the child's parents, or another professional worker, such as the visiting teacher, are called into conference. Since the interview is regarded as confidential, the room should offer privacy, and should be reasonably soundproof. The use of partial partitions is not satisfactory.

(3) Small Conference Room: The small conference room will be used for case conferences where as many as 10 persons may be present. It also may be used by such professional persons as the visiting teacher, school psychologist, health and medical services personnel, attendance officer, college admissions personnel, and the school psychometrist or diagnostician for individual testing or for small group (less than 10) testing.

(4) Multipurpose Guidance Room: This room will have many uses. These uses will vary from school to school depending upon the guidance which prevails. The room should be about the same size as a regular classroom. When a multipurpose room as a part of the guidance area is not feasible, some schools make use of a conveniently located classroom. Uses may include group procedures, group testing, and in-service training sessions in guidance. Some schools may use it as a center for information services. Access to the library and audio-visual storage room is necessary. This does not need to be direct access, but nearness to the library area would be desirable.

(5) Storage Room: Storage space has been indicated in several of the areas. This could be one area or several small areas, depending on the size of the guidance area and the ingenuity of the architect. Storage for any special equipment the guidance department might have is necessary. This will vary widely, but might include such items as calculating machines, films and film strips, posters, projectors, and screens.

d. Summary of Location and Space Guidelines

(1) Location: The guidance unit should be:

(a) Separate from but near the administrative offices for convenient access to personnel records and certain clerical services.
(b) Accessible by a direct entrance from corridor.
(c) Located to provide exits from counseling area separate from entrances, if possible.
(d) Readily accessible to students, and near the main flow of student traffic to facilitate contact, scheduling, and communication.

(e) Readily accessible from a main entrance for the benefit of parents and representatives of community agencies.
(f) Reasonably near to related personnel services, such as pupil accounting, health, and psychological services.
(g) Reasonably near to the library for convenience in use of display and reference materials.

(2) Space: The guidance unit should provide:

(a) Attractive and comfortable reception area with appropriate materials to encourage profitable use of waiting time.
(b) Private counseling rooms or offices.
(c) Conference room for such uses as case conferences; individual testing; special staff personnel such as the school nurse, visiting teacher, speech correctionist; interviewing by prospective employers and representatives of institutions of higher learning.

6. Administrative Facilities

The administrative personnel of the elementary and secondary school, to be effective, must have carefully planned facilities to render service to the school enrollment and to the community.

A central location on the main entrance floor is advisable for the administrative areas. It should be secluded, as much as possible, from outside and corridor noises and be convenient to, but separate from, the guidance and health service spaces.

As a minimum the administrative spaces should provide: administration office, public reception area, general office, storage for textbooks and supplies, and a storage vault or fire-resistant safe for keeping school records.

a. Public Reception Space: The size of this waiting area will vary with the size of the school and administrative policy. It should open directly into a public corridor and be equipped with lounge furniture and a display surface. The waiting area is usually separated from the general office by a flat top service counter.

b. General Office: Stenographic, clerical, record keeping, filing, and bookkeeping are some of the work functions performed in this area. It should be located adjacent to the public reception area and directly accessible to the administrator's office and storage vault. Approximately 300 square feet of area should be allocated for the general office. Also space should be provided for the program clock, central fire alarm system, and communications center.

c. Principal's Office: This office should be private; but also it must have direct access to the general office, waiting room, and corridor. The location must be readily accessible to staff, pupils, and the public. A minimum of 150 square feet should be provided for this office facility.

d. Conference Room: This area is needed for meetings, small groups, and committees. It should be connected to the general office and the corridor. Restroom facilities should be available.

e. First Aid Facility: A small room with hospital bed, first aid supplies, and health supplies is needed and should be located in close relation to the administration unit. It is intended for care of pupils who become ill or require rest and periodic medication.

f. Teachers' Workroom: In each school there should be an area where teachers have access to equipment and material for class preparation. The workroom to be located in close proximity to the library, administration area, and equipped so that teachers may meet and prepare for classes.

g. Faculty Lounge: This space is desirable and generally provided. It should be furnished with comfortable chairs, sofa, and clothes closet. A kitchen alcove with hot plate or snack bar unit is a worthwhile installation.

h. Toilet Facilities: Faculty toilets for each sex are essential in every school. These toilets should have ample fixtures and be located on every floor as well as in or adjoining the teachers' lounge and the administrative area.

i. Data Processing: The larger secondary schools are today experiencing a growing use of data processing facilities. Planning the data process center requires in-depth consideration of many factors including enrollment analysis, educational programs, and administrative and business functions. Future expansion must be considered in the initial planning of the program and will effect considerable savings.

The designated data process area must have an independent air-conditioning system for both temperature and humidity control. The processing equipment is valuable and complex, requiring engineered design space. Adequate storage is needed for tapes, forms, and card stocks. Good lighting and acoustical treatment are important.

j. Storage: Elementary and secondary schools need general storage areas located throughout all buildings for stocking supplies and equipment of the instructional programs.

Textbooks should be stored in a room with strong shelves located separately from other supply storage rooms or areas.

A custodian's storage space should be provided on each floor of every building located convenient to the general toilets. A service sink and adjustable shelving are needed in a space of at least 60 square feet.

k. Miscellaneous: A career information and planning center is desirable for the secondary school. It should be located adjacent to or near the guidance section. The center should be equipped with adequate shelf space and storage cabinets to display and house the latest and most appropriate printed and audio-visual materials of career and occupational work interest.

All schools should have a large display window or trophy case near the principal's office for exhibition of academic and athletic awards, and student handiwork for everyone to view. Other built-in display cases should be distributed as needed in other areas of the school building. Proper lighting of the display exhibits is a must.

APPENDIX "A"

I. Legal Procedure for Issuing School Building and Equipment Bonds -- A Checklist

A. Steps to be taken by parish school board in holding an election to incur bonded indebtedness.

1. Resolution creating the school district and defining its boundaries.

a. This resolution must be printed in a newspaper published within the district, or if there be no district paper, in a newspaper published in the parish in which the district is situated.

b. This resolution must be filed with the parish clerk's office.

2. A resolution must be passed employing bond attorneys and stating the need therefor and their fee. This resolution is subject to the approval of the Attorney General.

3. A resolution must be passed requesting the State Bond Commission to grant the school board permission to hold the election, sell the bonds and use the proceeds for the purpose for which they were voted, and to levy a tax for the retirement of the indebtedness.

4. After permission from the Bond Commission is obtained, a resolution must be passed calling the election.

a. A roll-call vote is required.

b. The resolution must state clearly the purpose for which the election is to be called.

5. The notice of election and proclamation must be drawn up and published.

a. Such notices must be published for thirty days in a newspaper published in the respective political subdivisions; or if there be no newspaper published therein, then in a newspaper published in the parish. Four publications in a newspaper once a week shall constitute a publication for thirty days, provided thirty days intervene between the date of the first publication and the date of the election.

6. The registrar of voters must be notified to prepare a list of persons registered to vote.

   a. It would be advisable to ask your bond attorneys for advice on how to handle persons whose names have been purged from the voters' list under State law. This procedure has been the subject of some Federal case law.

7. Print ballots.

8. Notify commissioners and clerks of election of their appointments.

9. Arrange for polling places.

10. Secure ballot boxes and place in each box materials listed below:

    a. List of registered voters.

    b. Numbered list of voters.

    c. Tally sheets.

    d. Pencils and pads.

    e. Ballots.

    f. Instructions to commissioners.

    g. Affidavit forms.

    h. Ink pens, blotters, and wax.

    i. Envelopes.

11. Deliver ballot boxes to clerks the day prior to the election.

12. Arrange for the return of the ballot boxes.

13. Canvass of election by school board, sitting as a Board of Supervisors of the election. A proces-verbal must be filed with the clerk's office.

14. Promulgation of the election.

    a. This must be signed by the members of the school board.

    b. This must be published in one issue of a newspaper published in the political subdivision, or if there be none, in a newspaper published in the parish.

    c. This promulgation must be made and signed in triplicate and also filed in the Secretary of State's office.

B. Steps to be taken by the parish school boards to issue bonds pursuant to a valid election.

15. A resolution authorizing the issuance of bonds pursuant to the proposition voted on by the electors must be passed. This resolution should state the bond terms and authorize a notice of sale to be published as well as advertising for bids. A date should be set for the acceptance of bids.

16. The actual advertising for bids and the publication of the notice of sale should be effected. Advertisement shall be published at least once a week for three weeks, the first publication to be made at least twenty-one days preceding the date fixed for the reception of the bids, in a newspaper published in the subdivision, or if there be none, in a newspaper published in the parish. Notice of sale shall also be

published once a week for three weeks preceding the date fixed for the reception of bids, either in a financial paper published in New York, or Chicago or in a newspaper of general circulation published in a city of the State of Louisiana having a population of not less than twenty thousand according to the last Federal census.

17. A motion to receive, open, and tabulate bids for purchase of bonds should be made.

18. A resolution should be adopted and entitled "Award Resolution" accepting the best bid for the sale of the bonds. A roll-call vote should be used.

19. The school board should insure that bond counsel is provided with the following certifcates in order to write their approving opinion:

    a. From the publisher of the local newspaper used by the school board that:

        (1) He is the publisher of the paper.
        (2) The resolution creating the school district was published and when.
        (3) The proclamation or notice of election was published as provided by law and when.
        (4) The promulgation of the election was published as provided by law and when
        (5) The advertisement of sale of bonds was published, giving dates of publication.

    b. From the publisher of the financial paper used that:

        (1) He is the publisher of the paper.
        (2) That the notice of sale of the bonds was published giving dates of publication.

    c. Certificate from the assessor:

(1) As to the assessed value of property in the special school district involved if applicable, and any overlapping school district separately.
(2) As to the money value of homestead exemptions in both the special school district and the overlapping districts if applicable.

d. In the clerk of court's office make sure that:

(1) The resolution creating the special school district has been filed.
(2) That the proces-verbal has been recorded.
(3) That absentee ballots were or were not cast.

e. In the Secretary of State's office make sure that the proces-verbal has been recorded.

f. The secretary of the school board should provide certificates to the effect that:

(1) No other school district is included in whole or in part in the territory now occupied by this special district, or
(2) That there is an overlapping district and stating the boundaries of each overlapping district.
(3) That the proces-verbal is filed in the archives of the school board.
(4) A certificate must be passed by the school board signed by the president of the board and the secretary to the effect that any bonds issued are issued conforming to State law, and that the transcript of the proceedings is correct.
(5) A certificate should be provided stating the membership of the board and its officers.

(6) A certificate appointing the proper newspaper used should be provided as a background.

g. The registrar of voters should provide a certificate that a list of registered voters was furnished to the school board for use in the election.

h. The treasurer of the school district should provide a resolution relative to the bonded indebtedness of the district or districts involved.

i. The parish engineer should provide a certified copy of an official map of the special school district or districts involved.

20. The school board should provide bond attorneys with the following documents:

a. Certified copy of the approval by the State Bond Commission for the school board to call the bond and/or tax election.

b. Certified copy of the resolution creating the special school district and newspaper clipping of the publication, if applicable.

c. Certified copy of the resolution calling the election.

d. Certified copy of the proclamation and newspaper clipping of the publication thereof.

e. Copy of official ballot.

f. Certified copy of the promulgation of the election and a newspaper clipping of the publication thereof.

g. Certified copy of the resolution authorizing the issuance of bonds, with certified extracts from minutes of the board meeting showing members of the board present and absent, and the vote by members for and against the adoption of the resolution.

h. Certified copy of the proceedings of the board upon sale of bonds, including proof of publication of "Notice of Sale" in all newspapers in which same was published; a list of bidders who submitted bids for the bonds, together with the amounts of their respective bids; certified copies of all the bids; and proceedings of the board in awarding the sale of the bonds.

i. Certificate from the clerk of court stating that within the 60-day period no litigation has been instituted in said court questioning the creation of the district or the legality of any of the proceedings authorizing the bonds and taxes necessary to pay for same or for any cause whatsoever.

j. Certificate from Secretary of State evidencing registration of the bonds in his office.

k. Specimen of executed bond.

l. Signature certificate, treasurer's receipt, and an arbitrage certificate if applicable (contact bond counsel to ascertain the requirements of an arbitrage certificate).

21. With the Secretary of State's office be sure that along with a copy of the promulgation of the election that a copy of the newspaper containing the publication of that promulgation is also filed.

NOTE: This outline is not intended to be an exhaustive, all encompassing outline such as to negate reliance on bond counsel as to what to do in any given situation. Bond counsel should be consulted in every step. Also, be sure to make certain of the exact delineation of duties of bond counsel. The most desirable method would be to obtain in writing from bond counsel a list of his specific duties agreed to for the fee agreed upon.

SAMPLE RESOLUTION

The following resolution was offered by Mr. ____

_____ and seconded by Mr. _____

_____.

RESOLUTION

A resolution providing for the employment of special counsel, designating their fee and providing for the payment thereof.

WHEREAS, this Parish School Board proposes to incur debt and issue bonds of School District No. ___ of _____ Parish, Louisiana, for the purpose of acquiring and/or improving lands for building sites and playgrounds, including construction of necessary sidewalks and streets adjacent thereto, purchasing, erecting and/or improving school buildings and other school related facilities within and for said School District and acquiring the necessary equipment and furnishings therefor; and

WHEREAS, this Parish School Board, after due deliberation, deems it necessary to protect the public interest and a real necessity exists therefor, to employ special counsel in connection with the incurring of debt and issuance of said bonds for the reason that this class of legal work requires the services of and can best be performed by recognized bond attorneys; and

WHEREAS,
, have specialized in this phase of legal work and are nationally recognized therein;

NOW, THEREFORE, BE IT RESOLVED by the Parish School Board of District No. ___ of _____ Parish, Louisiana, acting as the governing authority of said School District:

SECTION 1. That , be and they are hereby employed as special counsel of this Parish School Board and School District No. ___ of _____ Parish, Louisiana, to do and perform comprehensive legal work and coordinate professional work with respect to the issuance and sale of _____ Dollars _____ of school bonds of said School District payable from ad valorem taxation for the purpose of acquiring and/or improving lands for building sites and playgrounds, including construction of necessary sidewalks and streets adjacent thereto, purchasing, erecting and/or improving school buildings and other school related facilities within and for said School District and acquiring the necessary equipment and furnishings therefor. Said special counsel shall prepare and submit to this Parish School Board for adoption, all of the proceedings incidental to the authorization, issuance, sale and delivery of said bonds, shall counsel and advise this Parish School Board as to the issuance and sale of said bonds, and shall furnish their opinion covering the legality of the issuance thereof. The specific services to be performed by said bond counsel shall be those set forth in Paragraph III B of the "Suggested Minimum Fee Schedule for Performance of Services in Connection with the Authorization, Issuance, Sale, Delivery and Approval of Bonds by Attorneys Serving as Bond Counsel to the State, its Boards, Commissions and Agencies, Authorities created by Legislative Acts, Parishes, Municipalities, Other Political Subdivisions of the State and Units of Local Government," approved by the House of Delegates of the Louisiana State Bar Association on April 17, 1969, (hereinafter called the "Bond Attorneys' Minimum Fee Schedule"), a copy of which has been exhibited to this Parish School Board and a copy of which is on file in the office of the Attorney General of the State of Louisiana.

SECTION 2. That the fee of said special counsel shall be and the same is hereby fixed at the following percentages of the bonds actually sold, issued and delivered by School District No. ___ of _____ Parish, Louisiana:

Said special counsel shall also be reimbursed expenses incurred in connection with the preparation and distribution of an offering prospectus containing detailed and comprehensive financial and statistical data with respect to the School District. It is understood, however, that in the event the election to authorize the bonds fails, no fee shall be paid for any services which may have been rendered in connection therewith.

SECTION 3. That pursuant to instructions from the Secretary of said Parish School Board, the said _____ _____ shall also prepare and distribute an official prospectus containing detailed and comprehensive financial and statistical data required with respect to the sale of bonds and the costs of such prospectus shall be paid from the proceeds of the issue for which it has been prepared as provided herein.

SECTION 4. That a certified copy of this resolution shall be submitted to the Attorney General of the State of Louisiana for his written approval of said employment and of the fee herein designated.

SECTION 5. That the President and the Secretary of this Parish School Board are hereby empowered, authorized and directed to issue a voucher to the said special counsel in payment of the fee herein provided for under the conditions herein enumerated.

This resolution having been submitted to a vote, the vote thereon was as follows:

YEAS:

NAYS:

ABSENT:

And the resolution was declared adopted on this, the _____ day of _____, 19__.

_____ Secretary

_____ President

STATE OF LOUISIANA

PARISH OF _____

I, the undersigned Secretary of the Parish School Board of District No. ___ of _____ Parish, Louisiana, do hereby certify that the foregoing _____ ( ) pages constitute a true and correct copy of a resolution adopted by said Parish School Board on _____ _____ providing for the employment of special counsel, designating their fee and providing for the payment thereof.

IN FAITH WHEREOF, witness my official signature and the impress of the official seal of said Parish School Board at _____, Louisiana, on this, the _____ day of _____, 19__.

_____
Secretary

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Glossary of Construction Industry Terms

GLOSSARY
GLOSSARY REFERENCES
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1970 THE AMERICAN INSTITUTE OF ARCHITECTS

The American Institute of Architects has long recognized the need for a Glossary of terms which are used in, or are special to, the construction industry. The Institute first published a glossary in the 1963 Edition of Chapter 2, "The Construction Industry", of the Architect's Handbook of Professional Practice.

This 1970 Edition of the Glossary, which is being published separately, has been completely rewritten and considerably expanded, and is the first comprehensive AIA Glossary of terms to be published for the construction industry.

Terms used in the AIA practice documents have been defined as used in those documents, making this Glossary a helpful adjunct to their utilization and understanding.

The principles followed in the selection of the terms found in this edition of the Glossary were, first, to include those which have a special relationship or meaning in the design professions and/or the construction industry, and, second, in general to exclude those which are self-explanatory, which do not have special meanings or connotations in the construction industry, or which are adequately defined in standard dictionaries.

Following these principles, more terms were rejected than included in order to make the Glossary more manageable and useful — not only to those in the construction industry for whom it will be a valuable ready reference source, but also to those government agencies, attorneys, jurists, students, and laymen who will have the need for occasional reference to an authoritative source of construction industry definitions.

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M101

GLOSSARY

A

ACCEPTANCE: See **FINAL ACCEPTANCE.**

ACCIDENT (insurance terminology): A sudden, unexpected event identifiable as to time and place. See also **OCCURRENCE.**

ACOUSTICS: The science of sound, its production, transmission and effects.

ADDENDUM: Written or graphic instruments issued prior to the execution of the Contract which modify or interpret the bidding documents, including Drawings and Specifications, by additions, deletions, clarifications or corrections. Addenda will become part of the Contract Documents when the Construction Contract is executed. Plural — **ADDENDA.** (Ref. AIA Documents A201 and A701 and Handbook Chapter 14.)

ADDITION (to Contract Sum): Amount added to the Contract Sum by Change Order. See also **EXTRA.**

ADDITION (to the structure): A construction project physically connected to an existing structure, as distinct from alterations within an existing structure.

ADDITIONAL SERVICES (of the Architect): Professional services which may, upon the Owner's request or approval, be rendered by the Architect in addition to the Basic Services identified in the Owner-Architect Agreement. (Ref: AIA Document B131 and Handbook Chapter 9.)

ADDITIVE ALTERNATE: An alternate bid resulting in an addition to the same bidder's Base Bid. See also **ALTERNATE BID.**

ADMINISTRATION OF THE CONSTRUCTION CONTRACT: See **CONSTRUCTION PHASE — ADMINISTRATION OF THE CONSTRUCTION CONTRACT.**

ADVERTISEMENT FOR BIDS: Published public notice soliciting bids for a construction project. Most frequently used to conform to legal requirements pertaining to projects to be constructed under public authority, and usually published in newspapers of general circulation in those districts from which the public funds are derived.

AGENCY: (1) Relationship between agent and principal. (2) Organization acting as agent. (3) Administrative subdivision of an organization, particularly in government.

AGENT: One authorized by another to act in his stead or behalf.

AGREEMENT: (1) A meeting of minds. (2) A legally enforceable promise or promises between two or among several persons. (3) On a construction project, the document stating the essential terms of the Construction Contract which incorporates by reference the other Contract Documents. (4) The document setting forth the terms of the Contract between the Architect and Owner or between the Architect and a consultant. See also (1) **AGREEMENT FORM;** (2) **CONTRACT.** (Ref: AIA Documents A101, A107, A111, B131, B231, B331, C131, C231 and C331 and Handbook Chapters 9, 10, 17 and 18.)

AGREEMENT FORM: A document setting forth in printed form the general provisions of an Agreement, with spaces provided for insertion of specific data relating to a particular project. (Ref: AIA Documents A101, A107, A111, B131, B231, B331, C131, C231 and C331.)

ALLOWANCE: See (1) **CASH ALLOWANCE;** (2) **CONTINGENCY ALLOWANCE.**

ALTERATIONS: (1) A construction project (or portion of a project) comprising revisions within or to prescribed elements of an existing structure, as distinct from additions to an existing structure. (2) Remodeling.

ALTERNATE BID: Amount stated in the bid to be added to or deducted from the amount of the Base Bid if the corresponding change in project scope or alternate materials and/or methods of construction is accepted. (Ref: Handbook Chapter 14.)

APPLICATION FOR PAYMENT: Contractor's written request for payment of amount due for completed portions of the Work and, if the Contract so provides, for materials delivered and suitably stored pending their incorporation into the Work. (Ref: AIA Documents A201, G702, and G702A, and Handbook Chapter 18.)

APPRAISAL: Evaluation or estimate (preferably by a qualified professional appraiser) of the market or other value, cost, utility or other attribute of land or other facility.

APPROVAL, ARCHITECT'S: Architect's written or imprinted acknowledgement that materials, equipment or methods of construction are acceptable for use in the Work, or that a Contractor's request or claim is valid.

APPROVED EQUAL: Material, equipment or method approved by the Architect for use in the Work as being acceptable as an equivalent in essential attributes to the material, equipment or method specified in the Contract Documents. (Ref: Handbook Chapter 14.)

ARBITRATION: Method of settling claims or disputes between parties to a Contract, rather than by litigation, under which an arbitrator or a panel of arbitrators, selected for his or their specialized knowledge in the field in question, hears the evidence and renders a decision. (Ref: Construction Industry Arbitration Rules of the American Arbitration Association and AIA Documents A201, B131, B231, B331, C131, C231, and C331.)

ARCHITECT: Designation reserved, usually by law, for a

person or organization professionally qualified and duly licensed to perform architectural services, including analysis of project requirements, creation and development of the project design, preparation of Drawings, Specifications and bidding requirements, and general administration of the Construction Contract.

ARCHITECT-ENGINEER: An individual or firm offering professional services as both architect and engineer; term generally used in government contracts, particularly those with the Federal government.

ARCHITECT-IN-TRAINING: Use **INTERN ARCHITECT.**

AREA METHOD (of estimating cost): Method of estimating probable total construction cost by multiplying the adjusted gross floor area by a predetermined cost per unit of area. (Ref: AIA Document D101 and Handbook Chapter 15.)

ARTICLE: (1) A subdivision of a document. (2) In project specifications, the primary subdivision of the Section, often further subdivided into paragraphs, subparagraphs and clauses.

AS-BUILT DRAWINGS: Use **RECORD DRAWINGS.**

ASSOCIATE (of an office or firm): A member of an Architect's staff who has a special employment agreement. (Ref: Handbook Chapter 6.)

ASSOCIATE (or **ASSOCIATED**) **ARCHITECT:** An Architect who has a temporary partnership, joint venture or employment agreement with another Architect to collaborate in the performance of services for a specific project or series of projects. See also **JOINT VENTURE.** (Ref: Handbook Chapters 6 and 10.)

ATTORNEY IN FACT: A person authorized to act for or in behalf of another person or organization, to the extent prescribed in a written instrument known as a Power of Attorney. See also **POWER OF ATTORNEY.** (Ref: Handbook Chapter 7.)

AWARD: A communication from an Owner accepting a bid or negotiated proposal. An award creates legal obligations between the parties. (Ref: Handbook Chapter 16.)

B

BASE BID: Amount of money stated in the bid as the sum for which the bidder offers to perform the Work, not including that Work for which Alternate Bids are also submitted. (Ref: Handbook Chapter 16.)

BASE BID SPECIFICATIONS: The specifications listing or describing only those materials, equipment, and methods of construction upon which the Base Bid must be predicated, exclusive of any Alternate Bids. See also (1) **SPECIFICATIONS;** (2) **CLOSED SPECIFICATIONS.** (Ref: Handbook Chapter 14.)

BASIC SERVICES (of the Architect): The Architect's Basic Services consist of the following five Phases: Schematic Design; Design Development; Construction Documents; Bidding or Negotiation; and Construction Contract Administration. (Ref: AIA Documents B131, B231 and B331 and Handbook Chapter 9.)

BENEFICIAL OCCUPANCY: Use of a project or portion thereof for the purpose intended.

BENEFITS, MANDATORY & CUSTOMARY: Personnel benefits required by law (such as social security, workmen's compensation and disability insurance), and by custom (such as sick leave, holidays and vacation), and those which are optional with the respective firm (such as life insurance, hospitalization programs, pension plans and similar benefits).

BID: A complete and properly signed proposal to do the Work or designated portion thereof for the sums stipulated therein, supported by data called for by the bidding requirements. (Ref: Handbook Chapter 16.)

BID BOND: A form of bid security executed by the bidder as Principal and by a Surety. See also (1) **BID SECURITY;** (2) **SURETY.** (Ref: AIA Document A310 and Handbook Chapter 7.)

BID DATE: The date established by the Owner or the Architect for the receipt of bids. See also **BID TIME.** (Ref: Handbook Chapter 16.)

BID FORM: A form furnished to a bidder to be filled out, signed and submitted as his bid. (Ref: AIA Document A701 and Handbook Chapters 16 and 17.)

BID GUARANTEE: See **BID SECURITY.**

BID LETTING: Use **BID OPENING.**

BID OPENING: The opening and tabulation of bids submitted by the prescribed bid time and in conformity with the prescribed procedures. See also **BID TIME.**

BID PRICE: The sum stated in the bid for which the bidder offers to perform the Work.

BID SECURITY: The deposit of cash, certified check, cashier's check, bank draft, money order or Bid Bond submitted with a bid and serving to guarantee to the Owner that the bidder, if awarded the Contract, will execute such Contract in accordance with the bidding requirements and the Contract Documents.

BID TIME: The date and hour established by the Owner or the Architect for the receipt of bids. See also **BID DATE.** (Ref: Handbook Chapter 16.)

BIDDER: One who submits a bid for a prime contract with the Owner, as distinct from a sub-bidder who submits a bid to a prime bidder. Technically, a bidder is not a contractor on a specific project until a contract exists between him and the Owner. (Ref: Handbook Chapter 16.)

BIDDER, SELECTED: See **SELECTED BIDDER.**

BIDDERS, INVITED: See **INVITED BIDDERS.**

BIDDING DOCUMENTS: The advertisement or invitation to bid, Instructions to Bidders, the bid form and the proposed Contract Documents including any Addenda issued prior to receipt of bids. (Ref: AIA Document A701.)

BIDDING OR NEGOTIATION PHASE: The fourth Phase of the Architect's Basic Services, during which competitive bids or negotiated proposals are sought as the basis for awarding a contract. (Ref: AIA Documents B131, B231 and B331 and Handbook Chapters 9 and 16.)

BIDDING PERIOD: The calendar period beginning at the time of issuance of bidding requirements and Contract Documents and ending at the prescribed bid time. See also **BID TIME.**

BIDDING REQUIREMENTS: Those documents providing information and establishing procedures and conditions for the submission of bids. They consist of the notice to bidders or advertisement for bids, Instructions to Bidders, invitation to bid, and sample forms. See also **BIDDING DOCUMENTS.** (Ref: AIA Document A701.)

BILL OF MATERIALS: See **QUANTITY SURVEY.**

BODILY INJURY (insurance terminology): Physical injury, sickness or disease sustained by a person. See also **PERSONAL INJURY.**

BONA FIDE BID: Bid submitted in good faith, complete and in prescribed form which meets the conditions of the bidding requirements and is properly signed by someone legally authorized to sign such bid. (Ref: Handbook Chapters 9 and 16.)

BOND: See (1) **BID BOND;** (2) **LABOR AND MATERIAL PAYMENT BOND;** (3) **PERFORMANCE BOND;** (4) **SURETY BOND.**

BONUS AND PENALTY CLAUSE: A provision in the Construction Contract for payment of a bonus to the Contractor for completing the Work prior to a stipulated date, and a charge against the Contractor for failure to complete the Work by such stipulated date.

BONUS CLAUSE: A provision in the Construction Contract for additional payment to the Contractor as a reward for completing the Work prior to a stipulated date. (Ref: Handbook Chapter 17.)

BOUNDARY SURVEY: A mathematically closed diagram of the complete peripheral boundary of a site, reflecting dimensions, compass bearings and angles. It should bear a licensed land surveyor's signed certification, and may include a metes and bounds or other written description.

BREAKDOWN, CONTRACTOR'S: Use **SCHEDULE OF VALUES.**

BUDGET, CONSTRUCTION: (1) The sum established by the Owner as available for construction of the Project. (2) The stipulated highest acceptable bid price or, in the case of a project involving multiple construction contracts, the stipulated aggregate total of the highest acceptable bid prices. (Ref: Handbook Chapter 15.)

BUDGET, PROJECT: The sum established by the Owner as available for the entire Project, including the construction budget, land costs, equipment costs, financing costs, compensation for professional services, contingency allowance, and other similar established or estimated costs. (Ref: Handbook Chapter 15.)

BUILDER'S RISK INSURANCE: A specialized form of property insurance to cover Work in the course of construction. See also **PROPERTY INSURANCE.** (Ref: Handbook Chapter 7.)

BUILDING CODE: See **CODES.**

BUILDING INSPECTOR: A representative of a governmental authority employed to inspect construction for compliance with applicable codes, regulations and ordinances. (Ref: Handbook Chapter 18.)

BUILDING PERMIT: A permit issued by appropriate governmental authority allowing construction of a Project in accordance with approved Drawings and Specifications.

C

CARE, CUSTODY AND CONTROL (insurance terminology): The term used to describe a standard exclusion in liability insurance policies. Under this exclusion, the liability insurance does not apply to damage to property in the care or custody of the insured, or to damage to property over which the insured is for any purpose exercising physical control.

CASH ALLOWANCE: An amount established in the Contract Documents for inclusion in the Contract Sum to cover the cost of prescribed items not specified in detail, with provision that variations between such amount and the finally determined cost of the prescribed items will be reflected in Change Orders appropriately adjusting the Contract Sum. (Ref: AIA Document A201 and Handbook Chapter 14.)

CERTIFICATE FOR PAYMENT: A statement from the Architect to the Owner confirming the amount of money due Contractor for Work accomplished or materials and equipment suitably stored, or both. (Ref: AIA Documents A101, A201, B131, B231, B331 and G703 and Handbook Chapter 18.)

CERTIFICATE OF INSURANCE: A memorandum issued by an authorized representative of an insurance company stating the types, amounts and effective dates of insurance in force for a designated insured. (Ref: AIA Documents A201 and G705.)

CERTIFICATE OF OCCUPANCY: Document issued by governmental authority certifying that all or a designated portion of a building complies with the provisions of applicable statutes and regulations, and permitting occupancy for its designated use. (Ref: Handbook Chapter 18.)

CHANGE ORDER: A written order to the Contractor signed by the Owner and the Architect, issued after the execution of the Contract, authorizing a Change in the Work or an adjustment in the Contract Sum or the Contract Time. A Change Order may be signed by the Architect alone, provided he has written authority from the Owner for such procedure and that a copy of such

written authority is furnished to the Contractor upon request. A Change Order may also be signed by the Contractor if he agrees to the adjustment in the Contract Sum or the Contract Time. The Contract Sum and the Contract Time may be changed only by Change Order. (Ref: AIA Document A201 and Handbook Chapter 13.)

CHANGES IN THE WORK: Changes ordered by the Owner consisting of additions, deletions or other revisions within the general scope of the Contract, the Contract Sum and the Contract Time being adjusted accordingly. All Changes in the Work, except those of a minor nature not involving an adjustment to the Contract Sum or the Contract Time, should be authorized by Change Order. See also **FIELD ORDER.** (Ref: AIA Documents A201 and G701 and Handbook Chapter 18.)

CLARIFICATION DRAWING: A graphic interpretation of the Drawings or other Contract Documents issued by the Architect as part of an Addendum, Modification, Change Order or Field Order.

CLAUSE: In the AIA Documents, a subdivision of a Subparagraph, identified by four numerals - e.g., 2.2.10 1.

CLERK OF THE WORKS: Obsolete; use **PROJECT REPRESENTATIVE.**

CLOSED LIST OF BIDDERS: See **INVITED BIDDERS.**

CLOSED SPECIFICATIONS: Specifications stipulating the use of specific products or processes without provision for substitution. See also **BASE BID SPECIFICATIONS.**

CODES: Regulations, ordinances or statutory requirements of a governmental unit relating to building construction and occupancy, adopted and administered for the protection of the public health, safety and welfare.

COMPENSATION: (1) Payment for services rendered or products or materials furnished or delivered. (2) Payment in satisfaction of claims for damages suffered. (Ref: AIA Manual "Methods of Compensation for Architectural Services".)

COMPLETED OPERATIONS INSURANCE: Liability insurance coverage for injuries to persons or damage to property occurring after an operation is completed but attributed to that operation. An operation is completed (1) when all operations under the Contract have been completed or abandoned; or (2) when all operations at one project site are completed; or (3) when the portion of the Work out of which the injury or damage arises has been put to its intended use by the person or organization for whom that portion of the Work was done. Completed Operations Insurance does not apply to damage to the completed Work itself.

COMPLETION DATE: The date established in the Contract Documents for Substantial Completion of the Work. See also (1) **DATE OF SUBSTANTIAL COMPLETION;** (2) **TIME OF COMPLETION.** (Ref: Handbook Chapter 17.)

COMPLETION LIST: See **INSPECTION LIST.**

COMPLETION, SUBSTANTIAL: See **DATE OF SUBSTANTIAL COMPLETION.**

COMPREHENSIVE GENERAL LIABILITY INSURANCE: A broad form of liability insurance covering claims for bodily injury and property damage which combines under one policy coverage for all liability exposures (except those specifically excluded) on a blanket basis and automatically covers new and unknown hazards that may develop. Comprehensive General Liability Insurance automatically includes contractual liability coverage for certain types of contracts. Products Liability, Completed Operations Liability and Broader Contractual Liability coverages are available on an optional basis. This policy may also be written to include Automobile Liability.

COMPREHENSIVE SERVICES: Professional services performed by the Architect in addition to the Basic Services, in such related areas as project analysis, programming, land use studies, feasibility investigations, financing, construction management and special consulting services. (Ref: AIA Document B440.)

CONDITIONS OF THE BID: Conditions set forth in the Instructions to Bidders, the notice to bidders or advertisement for bids, the invitation to bidders or other similar documents prescribing the conditions under which bids are to be prepared, executed, submitted, received and accepted. (Ref: AIA Document A701.)

CONDITIONS OF THE CONTRACT: Those portions of the Contract Documents which define, set forth, or relate to: contract terminology; the rights and responsibilities of the contracting parties and of others involved in the Work; requirements for safety and for compliance with laws and regulations; general procedures for the orderly prosecution and management of the Work; payments to the Contractor; and similar provisions of a general, non-technical nature. The Conditions of the Contract include General Conditions, Supplementary Conditions, and other Conditions.

CONSENT OF SURETY: Written consent of the surety on a Performance Bond and/or Labor and Material Payment Bond to such Contract changes as Change Orders or reductions in the Contractor's retainage, or to final payment, or to waiving notification of Contract changes. The term is also used with respect to an extension of time in a Bid Bond. (Ref: AIA Documents A310, A311 and G707.)

CONSTRUCTION COST: The cost of all of the construction portions of a Project, generally based upon the sum of the construction contract(s) and other direct construction costs. Construction Cost does not include the compensation paid to the Architect and consultants, the cost of the land, rights-of-way or other costs which are defined in the Contract Documents as being the responsibility of the Owner.

CONSTRUCTION DOCUMENTS: Working Drawings and Specifications. (Ref: Handbook Chapters 12 and 14.)

CONSTRUCTION DOCUMENTS PHASE: The third Phase of the Architect's Basic Services. In this Phase the Archi-

tect prepares from the approved Design Development Documents, for approval by the Owner, the Working Drawings and Specifications and the necessary bidding information. In this Phase the Architect also assists the Owner in the preparation of bidding forms, the Conditions of the Contract, and the form of Agreement between the Owner and the Contractor. (Ref: AIA Documents B131, B231 and B331 and Handbook Chapters 9 and 11.)

CONSTRUCTION INSPECTOR: See **PROJECT REPRESENTATIVE.**

CONSTRUCTION MANAGEMENT: Special management services performed by the Architect or others during the Construction Phase of the Project, under separate or special agreement with the Owner. This is not part of the Architect's Basic Services, but is an additional service sometimes included in Comprehensive Services. (Ref: AIA Document B440.)

CONSTRUCTION PHASE — ADMINISTRATION OF THE CONSTRUCTION CONTRACT: The fifth and final Phase of the Architect's Basic Services, which includes the Architect's general administration of the Construction Contract(s). See also **CONTRACT ADMINISTRATION.** (Ref: AIA Documents A201, B131, B231 and B331 and Handbook Chapters 7, 9, 13, 18 and 19.)

CONSULTANT: An individual or organization engaged by the Owner or the Architect to render professional consulting services complementing or supplementing the Architect's services. (Ref: Handbook Chapter 10.)

CONTINGENCY ALLOWANCE: A sum designated to cover unpredictable or unforeseen items of Work, or changes subsequently required by the Owner. (Ref: Handbook Chapter 14.)

CONTINGENT AGREEMENT: An Agreement, generally between an Owner and an Architect, in which some portion of the Architect's compensation is contingent upon the Owner's obtaining funds for the Project (such as by successful referendum, sale of bonds or securing of other financing), or upon some other specially prescribed condition.

CONTRACT: A legally enforceable promise or agreement between two or among several persons. See also **AGREEMENT.**

CONTRACT ADMINISTRATION: The duties and responsibilities of the Architect during the Construction Phase. (Ref: AIA Documents A201, B131, B231 and B331 and Handbook Chapter 18.)

CONTRACT DATE: See **DATE OF AGREEMENT.**

CONTRACT DOCUMENTS: The Owner-Contractor Agreement, the Conditions of the Contract (General, Supplementary and other Conditions), the Drawings, the Specifications, all Addenda issued prior to execution of the Contract, all Modifications thereto, and any other items specifically stipulated as being included in the Contract Documents. (Ref: AIA Document A201 and Handbook Chapters 13 and 18.)

CONTRACT LIMIT: A limit line or perimeter line established on the Drawings or elsewhere in the Contract Documents defining the boundaries of the site available to the Contractor for construction purposes.

CONTRACT SUM: The price stated in the Owner-Contractor Agreement, which is the total amount payable by the Owner to the Contractor for the performance of the Work under the Contract Documents. The Contract Sum can be adjusted only by Change Order. (Ref: AIA Document A201 and Handbook Chapter 17.)

CONTRACT TIME: The period of time established in the Contract Documents within which the Work must be completed. The Contract Time can be adjusted only by Change Order. (Ref: AIA Document A201 and Handbook Chapter 17.)

CONTRACTING OFFICER: The person designated as an official representative of the Owner with specific authority to act in his behalf in connection with a Project.

CONTRACTOR: (1) One who contracts. (2) In construction terminology, the person or organization responsible for performing the Work and identified as such in the Owner-Contractor Agreement. (Ref: Handbook Chapter 17.)

CONTRACTOR'S AFFIDAVIT: A certified statement of the Contractor, properly notarized, relating to payment of debts and claims, release of liens, or similar matters requiring specific evidence for the protection of the Owner. See also **NON-COLLUSION AFFIDAVIT.** (Ref: AIA Documents G706 and G706A.)

CONTRACTOR'S LIABILITY INSURANCE: Insurance purchased and maintained by the Contractor to protect him from specified claims which may arise out of or result from his operations under the Contract, whether such operations be by himself or by any Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable. (Ref: AIA Documents A201 and G705 and Handbook Chapter 7.)

CONTRACTOR'S OPTION: Provision of the Contract Documents under which the Contractor may select certain specified materials, methods or systems at his own option, without change in the Contract Sum. (Ref: Handbook Chapter 14.)

CONTRACTUAL LIABILITY: Liability assumed by a party under a contract. An indemnification or "hold harmless" clause is an example of contractual liability. (Ref: AIA Documents A201 and G705.)

COST BREAKDOWN: See **SCHEDULE OF VALUES.**

COST PLUS FEE AGREEMENT: An Agreement under which the Contractor (in an Owner-Contractor Agreement) or the Architect (in an Owner-Architect Agreement) is reimbursed for his direct and indirect costs and, in addition, is paid a fee for his services. The fee is usually stated as a stipulated sum or as a percentage of cost. (Ref: AIA Documents A111, B331 and C331.)

CRITICAL PATH METHOD (CPM): A charting of all events

and operations to be encountered in completing a given process, rendered in a form permitting determination of the relative significance of each event, and establishing the optimum sequence and duration of operations. See also **PERT SCHEDULE.** (Ref: Handbook Chapter 18.)

CUBAGE: The architectural volume of a building; the sum of the products of (1) the areas and (2) the height from the underside of the lowest floor construction system to the average height of the surface of the finished roof above, for the various parts of the building. (Ref: AIA Document D101 and Handbook Chapter 15.)

D

DATE OF AGREEMENT: The date stated on the face of the Agreement. If no date is stated, it could be the date on which the Agreement is actually signed, if this is recorded, or it may be the date established by the award. Also sometimes referred to as the Contract Date.

DATE OF COMMENCEMENT OF THE WORK: The date established in a Notice to Proceed or, in the absence of such Notice, the date of the Agreement or such other date as may be established therein or by the parties thereto. (Ref: AIA Document A201 and Handbook Chapters 13, 17 and 19.)

DATE OF SUBSTANTIAL COMPLETION: The date certified by the Architect when the Work or a designated portion thereof is sufficiently complete, in accordance with the Contract Documents, so the Owner may occupy the Work or designated portion thereof for the use for which it is intended. (Ref: AIA Documents A201 and G704 and Handbook Chapter 13 and 18.)

DEDUCTION (from Contract Sum): Amount deducted from the Contract Sum by Change Order.

DEDUCTIVE ALTERNATE: An alternate bid resulting in a deduction from the same bidder's Base Bid. See also **ALTERNATE BID.**

DEFECTIVE WORK: Work not complying with the Contract requirements.

DEFICIENCIES: See **DEFECTIVE WORK.**

DEPOSIT FOR BIDDING DOCUMENTS: Monetary deposit required to obtain a set of Construction Documents and bidding requirements, customarily refunded to bona fide bidders on return of the documents in good condition within a specified time. (Ref: AIA Documents A501 and A701 and Handbook Chapter 16.)

DESIGN DEVELOPMENT PHASE: The second Phase of the Architect's Basic Services. In this Phase the Architect prepares from the approved Schematic Design Studies, for approval by the Owner, the Design Development Documents consisting of drawings and other documents to fix and describe the size and character of the entire Project as to structural, mechanical and electrical systems, materials and such other essentials as may be appropriate. The Architect also submits to the Owner a further Statement of Probable Construction Cost. (Ref: AIA Documents B131, B231 and B331 and Handbook Chapters 9 and 11.)

DESIGN PROFESSIONS: See **ENVIRONMENTAL DESIGN PROFESSIONS.**

DETAIL: A drawing, at a larger scale, of a part of another drawing, indicating in detail the design, location, composition and correlation of the elements and materials shown. (Ref: Handbook Chapter 12.)

DIRECT EXPENSE: All items of expense directly incurred by or attributable to a specific project, assignment or task.

DIRECT PERSONNEL EXPENSE: Salaries and wages of principals and employees engaged on a project, assignment or task, including mandatory and customary benefits.

DIVISION (of the Specifications): One of the sixteen basic organizational subdivisions used in the Uniform System for Construction Specifications, Data Filing and Cost Accounting. (Ref: AIA Document K103 and Handbook Chapter 14.)

DOCUMENT DEPOSIT: See **DEPOSIT FOR BIDDING DOCUMENTS.**

DRAWINGS: The portion of the Contract Documents showing in graphic or pictorial form the design, location and dimensions of the elements of a Project. (Ref: Handbook Chapter 12.)

DUE CARE: A legal term indicating the requirement for a professional to exercise reasonable care, skill, ability and judgment in the performance of his duties and services consistent with the level of such services provided by reputable professionals in the same geographical area and at the same period of time.

E

ELEVATION: (1) A two-dimensional graphic representation of the design, location and certain dimensions of the Project, or parts thereof, seen in a vertical plane viewed from a given direction. (2) Distance above or below a prescribed datum or reference point. (Ref: Handbook Chapter 12.)

EMPLOYER'S LIABILITY INSURANCE: Insurance protection for the employer against claims by employees for damages which arise out of injuries or diseases sustained in the course of their work and which are based on common law negligence rather than on liability under workmen's compensation acts. (Ref: AIA Document G705 and Handbook Chapter 7.)

ENGINEER: See **PROFESSIONAL ENGINEER.**

ENGINEER-IN-TRAINING: Designation prescribed by statute for a person qualified for professional engineering registration in all respects except the required professional experience.

ENGINEERING OFFICER: A person designated, usually by a military component or a corporation, as having authoritative charge over certain specific engineering operations and duties.

ENVIRONMENTAL DESIGN PROFESSIONS: The professions collectively responsible for the design of man's physical environment, including architecture, engineering, landscape architecture, urban planning, and similar environment-related professions.

ERRATUM: Correction of a printing, typographical or editorial error. Not to be confused with Addendum. Plural — **ERRATA.**

ERRORS AND OMISSIONS INSURANCE: See **PROFESSIONAL LIABILITY INSURANCE.**

ESTIMATE: See (1) **ESTIMATE OF CONSTRUCTION COST, DETAILED;** (2) **STATEMENT OF PROBABLE CONSTRUCTION COST.**

ESTIMATE (Contractor's): (1) A forecast of Construction Cost, as opposed to a firm proposal, prepared by a Contractor for a Project or a portion thereof. (2) A term sometimes used to denote a Contractor's application or request for a progress payment. With respect to (2), see also **APPLICATION FOR PAYMENT.**

ESTIMATE OF CONSTRUCTION COST, DETAILED: A forecast of Construction Cost prepared on the basis of a detailed analysis of materials and labor for all items of Work, as contrasted with an estimate based on current area, volume or similar unit costs. (Ref: Handbook Chapter 15.)

EXPERT WITNESS: A witness in a court case or other legal proceeding, or in an arbitration proceeding, who, by virtue of his experience, training, skill and knowledge of a particular field or subject, is recognized as being especially qualified to render an informed opinion on matters relating to that field or subject.

EXTENDED COVERAGE INSURANCE: See **PROPERTY INSURANCE.** See also **STEAM BOILER AND MACHINERY INSURANCE.**

EXTRA: An item of Work involving additional cost. See also **ADDITION** (to Contract Sum).

EXTRA SERVICES: See **ADDITIONAL SERVICES** (of the Architect.)

F

FEASIBILITY STUDY: A detailed investigation and analysis conducted to determine the financial, economic, technical or other advisability of a proposed project.

FEE: A term used to denote payment for professional ability, capability and availability of organization, excluding compensation for direct, indirect and/or reimbursable expenses, as an Agreement based on a "professional fee plus expenses". Sometimes used to denote compensation of any kind for services rendered. See also **COMPENSATION.** (Ref: AIA Documents A111, B331 and C331 and Handbook Chapters 9 and 10.)

FEE PLUS EXPENSE AGREEMENT: See **COST PLUS FEE AGREEMENT.**

FIELD ENGINEER: Term used by certain governmental agencies to designate their representative at the Project site. See also **PROJECT REPRESENTATIVE.**

FIELD ORDER: A written order effecting a minor change in the Work not involving an adjustment in the Contract Sum or an extension of the Contract Time, issued by the Architect to the Contractor during the Construction Phase. (Ref: AIA Documents A201 and G708 and Handbook Chapter 18.)

FIELD REPRESENTATIVE: See **PROJECT REPRESENTATIVE.**

FINAL ACCEPTANCE: The Owner's acceptance of the Project from the Contractor upon certification by the Architect that it is complete and in accordance with the Contract requirements. Final acceptance is confirmed by the making of final payment unless otherwise stipulated at the time of making such payment. (Ref: AIA Document A201 and Handbook Chapter 18.)

FINAL COMPLETION: Term denoting that the Work is complete and all Contract requirements have been fulfilled by the Contractor. (Ref: AIA Document A201 and Handbook Chapters 18 and 19.)

FINAL INSPECTION: Final review of the Project by the Architect prior to his issuance of the final Certificate for Payment. (Ref: AIA Document G703.)

FINAL PAYMENT: Payment made by the Owner to the Contractor, upon issuance by the Architect of the final Certificate for Payment, of the entire unpaid balance of the Contract Sum as adjusted by Change Orders. See also **FINAL ACCEPTANCE.** (Ref: AIA Document A201 and Handbook Chapter 18.)

FIRE AND EXTENDED COVERAGE INSURANCE: See **PROPERTY INSURANCE.**

FIXED LIMIT OF CONSTRUCTION COST: The maximum allowable cost of the construction Work as established in the Agreement between the Owner and the Architect. See also **BUDGET, CONSTRUCTION.** (Ref: AIA Documents B131, B231, B331, C131, C231 and C331.)

FORCE ACCOUNT: Term used when Work is ordered to be done without prior agreement as to lump sum or unit price cost thereof and is to be billed for at cost of labor, materials and equipment, insurance, taxes, etc., plus an agreed percentage for overhead and profit.

FORMAT (for Construction Specifications): Standardized arrangement for the Project Manual including bidding information, contract forms, Conditions of the Contract, and Specifications subdivided into sixteen Divisions. (Ref: AIA Document K103.)

G

GENERAL CONDITIONS (of the Contract for Construction): That part of the Contract Documents which sets forth many of the rights, responsibilities and relation-

ships of the parties involved. See also **CONDITIONS OF THE CONTRACT.** (Ref: AIA Document A201.)

GENERAL CONTRACT: (1) Under the single contract system, the Contract between the Owner and the Contractor for construction of the entire Work. (2) Under the separate contract system, that Contract between the Owner and a Contractor for construction of architectural and structural Work.

GENERAL REQUIREMENTS: Title of Division 1 of Uniform System for Construction Specifications, Data Filing and Cost Accounting. (Ref: AIA Document K103.)

GUARANTEE: Legally enforceable assurance of the duration of satisfactory performance or quality of a product or Work.

GUARANTEED MAXIMUM COST: Amount established in an Agreement between Owner and Contractor as the maximum cost of performing specified Work on the basis of cost of labor and materials plus overhead expense and profit. (Ref: AIA Document A111.)

GUARANTY: See **GUARANTEE.**

GUARANTY BONDS: See (1) **BID BOND;** (2) **LABOR AND MATERIAL PAYMENT BOND;** (3) **PERFORMANCE BOND;** (4) **SURETY BOND.**

H

HEADING: A classification of related data used in the Filing System (Part Two of the Uniform System) as the first step in subdividing each of the sixteen Divisions and corresponding generally to the Sections used in Parts One and Three. (Ref: AIA Document K103.)

HOLD HARMLESS: See **INDEMNIFICATION.** See also **CONTRACTUAL LIABILITY.**

I

INDEMNIFICATION: A contractual obligation by which one person or organization agrees to secure another against loss or damage from specified liabilities.

INDEMNIFICATION, IMPLIED: An indemnification which is implied by law rather than arising out of a contract.

INDEX OF KEY WORDS: Part Four of the Uniform System for Construction Specifications, Data Filing and Cost Accounting. (Ref: AIA Document K103.)

INDIRECT EXPENSE: Overhead expense; expense indirectly incurred and not directly chargeable to a specific project or task. (Ref: Handbook Chapter 6 and "The Economics of Architectural Practice", "Profit Planning in Architectural Practice", and "Methods of Compensation for Architectural Services" all published by the AIA.)

INSPECTION: Examination of Work completed or in progress to determine its compliance with Contract requirements. The Architect ordinarily makes only two inspections of a construction project, one to determine Substantial Completion, and the other to determine final completion. These inspections should be distinguished from the more general observations made by the Architect on his periodic visits to the site during the progress of the Work. The term is also used to mean examination of the Work by a public official, Owner's representative, or others. (Ref: AIA Document A201 and Handbook Chapter 18.)

INSPECTION LIST: A list of items of Work to be completed or corrected by the Contractor. (Ref: Handbook Chapter 18.)

INSPECTOR: See (1) **BUILDING INSPECTOR;** (2) **OWNER'S INSPECTOR;** (3) **RESIDENT ENGINEER.**

INSTRUCTIONS TO BIDDERS: Instructions contained in the bidding requirements for preparing and submitting bids for a construction Project. See also **NOTICE TO BIDDERS.** (Ref: AIA Document A701 and Handbook Chapter 16.)

INSURANCE: See (1) **BUILDER'S RISK INSURANCE;** (2) **COMPLETED OPERATIONS INSURANCE;** (3) **COMPREHENSIVE GENERAL LIABILITY INSURANCE;** (4) **CONTRACTOR'S LIABILITY INSURANCE;** (5) **EMPLOYER'S LIABILITY INSURANCE;** (6) **LIABILITY INSURANCE;** (7) **LOSS OF USE INSURANCE;** (8) **OWNER'S LIABILITY INSURANCE;** (9) **PROFESSIONAL LIABILITY INSURANCE;** (10) **PROPERTY DAMAGE INSURANCE;** (11) **PROPERTY INSURANCE;** (12) **PUBLIC LIABILITY INSURANCE;** (13) **SPECIAL HAZARDS INSURANCE;** (14) **STEAM BOILER AND MACHINERY INSURANCE;** (15) **WORKMEN'S COMPENSATION INSURANCE.**

INTERN ARCHITECT: One pursuing a program of training in practice under the guidance of practicing Architects, with the objective of qualifying for registration as an Architect. (Ref: Handbook Chapter 4.)

INVITATION TO BID: A portion of the bidding requirements soliciting bids for a privately financed construction Project. See also **ADVERTISEMENT FOR BIDS.**

INVITED BIDDERS: The bidders selected by the Architect and the Owner as the only ones from whom bids will be received.

ISOMETRIC DRAWING: A form of three-dimensional projection in which all of the principal planes are drawn parallel to corresponding established axes and at true dimensions. Horizontals are usually drawn at 30 degrees from the normal horizontal axes; verticals remain parallel to the normal vertical axis.

J

JOB: See (1) **PROJECT;** (2) **WORK.**

JOB CAPTAIN: Member of the Architect's staff normally responsible, on a given Project, for the preparation of Drawings and their coordination with other documents. (Ref: Handbook Chapter 11.)

JOB SITE: See **SITE.**

JOB SUPERINTENDENT: See **SUPERINTENDENT.**

JOINT VENTURE: A collaborative undertaking by two or more persons or organizations for a specific Project or Projects, having the legal characteristics of a partnership. (Ref: Handbook Chapter 10.)

L

LABOR AND MATERIAL PAYMENT BOND: A bond of the Contractor in which a Surety guarantees to the Owner that the Contractor will pay for labor and materials used in the performance of the Contract. The claimants under the bond are defined as those having direct contracts with the Contractor or any Subcontractor. (Ref: AIA Document A311 and Handbook Chapter 7.)

LAND SURVEY: See (1) **BOUNDARY SURVEY;** (2) **SURVEY.**

LETTER AGREEMENT or **LETTER OF AGREEMENT:** A letter stating the terms of an Agreement between addressor and addressee, usually prepared to be signed by the addressee to indicate his acceptance of those terms as legally binding. (Ref: Handbook Chapter 9.)

LETTER OF INTENT: A letter signifying an intention to enter into a formal Agreement, usually setting forth the general terms of such Agreement. (Ref: Handbook Chapter 17.)

LETTING (BID): See **BID OPENING.**

LIABILITY INSURANCE: Insurance which protects the insured against liability on account of injury to the person or property of another. See also (1) **COMPLETED OPERATIONS INSURANCE;** (2) **COMPREHENSIVE GENERAL LIABILITY INSURANCE;** (3) **CONTRACTOR'S LIABILITY INSURANCE;** (4) **EMPLOYER'S LIABILITY INSURANCE;** (5) **OWNER'S LIABILITY INSURANCE;** (6) **PROFESSIONAL LIABILITY INSURANCE;** (7) **PROPERTY DAMAGE INSURANCE;** (8) **PUBLIC LIABILITY INSURANCE;** (9) **SPECIAL HAZARDS INSURANCE.**

LICENSED ARCHITECT: See **ARCHITECT.**

LICENSED CONTRACTOR: A person or organization certified by governmental authority, where required by law, to engage in construction contracting.

LICENSED ENGINEER: See **PROFESSIONAL ENGINEER.**

LIEN: See **MECHANIC'S LIEN.**

LIEN WAIVER: See **WAIVER OF LIEN.**

LIQUIDATED DAMAGES: A sum established in a Construction Contract, usually as a fixed sum per day, as the measure of damages suffered by the Owner due to failure to complete the Work within a stipulated time. See also (1) **BONUS AND PENALTY CLAUSE;** (2) **BONUS CLAUSE.** (Ref: Handbook Chapter 17.)

LOSS OF USE INSURANCE: Insurance protecting against financial loss during the time required to repair or replace property damaged or destroyed by an insured peril. (Ref: Handbook Chapter 7.)

LOW BID: Bid stating the lowest bid price, including selected alternates, and complying with all bidding requirements. (Ref: AIA Document A501 and Handbook Chapter 16.)

LOWEST QUALIFIED BIDDER: See **LOWEST RESPONSIBLE BIDDER.**

LOWEST RESPONSIBLE BIDDER: Bidder who submits the lowest bona fide bid and is considered by the Owner and the Architect to be fully responsible and qualified to perform the Work for which the bid is submitted.

LOWEST RESPONSIVE BID: The lowest bid which is responsive to and complies with the bidding requirements.

LUMP SUM AGREEMENT: See **STIPULATED SUM AGREEMENT.**

M

MANDATORY AND CUSTOMARY BENEFITS: See **BENEFITS, MANDATORY AND CUSTOMARY.**

MATERIAL SUPPLIER: See **SUPPLIER.**

MECHANIC'S LIEN: A lien on real property created by statute in all states in favor of persons supplying labor or materials for a building or structure for the value of labor or materials supplied by them. In some jurisdictions a mechanic's lien also exists for the value of professional services. Clear title to the property cannot be obtained until the claim for the labor, materials or professional services is settled. (Ref: Handbook Chapter 19.)

METES AND BOUNDS: The boundaries, property lines or limits of a parcel of land, defined by distances and compass directions.

MINOR CHANGE (in the Work): A change of minor nature in the Work not involving an adjustment in the Contract Sum or Contract Time, which may be effected by Field Order or other written order issued by the Architect. (Ref: AIA Documents A201 and G708 and Handbook Chapter 18.)

MODIFICATION (to the Contract Documents): (1) A written amendment to the Contract signed by both parties. (2) A Change Order. (3) A written or graphic interpretation issued by the Architect. (4) A written order for a minor change in the Work issued by the Architect. See also (1) **CHANGE ORDER;** (2) **FIELD ORDER.** (Ref: AIA Document A201.)

MODULE: (1) A repetitive dimensional or functional unit used in planning, recording, or constructing buildings or other structures. (2) A distinct component forming part of an ordered system.

MULTIPLE OF DIRECT PERSONNEL EXPENSE: A method of compensation for professional services based on the direct expense of professional and technical personnel, including cost of salaries and mandatory and customary benefits, multiplied by an agreed factor. (Ref: AIA Documents B231 and C231 and Handbook Chapter 9.)

MULTIPLIER: The factor by which an Architect's Direct Personnel Expense is multiplied to determine compensation for his professional services or designated portions thereof. (Ref: AIA Documents B131, B231, B331, C131, C231 and C331.)

N

NEGLIGENCE: Failure to exercise that degree of care which a reasonable and prudent person would exercise under the same circumstances. Legal liability for the consequences of an act or omission frequently turns on whether or not there has been negligence.

NEGOTIATION PHASE: See **BIDDING OR NEGOTIATION PHASE.**

NON-COLLUSION AFFIDAVIT: Notarized statement by a bidder that he has prepared his bid without collusion of any kind.

NON-CONFORMING WORK: Work that does not fulfill the requirements of the Contract Documents. (Ref: AIA Document A201.)

NOTICE TO BIDDERS: A notice contained in the bidding requirements informing prospective bidders of the opportunity to submit bids on a Project and setting forth the procedures for doing so. See also **INSTRUCTIONS TO BIDDERS.** (Ref: AIA Document A701 and Handbook Chapter 16.)

NOTICE TO PROCEED: Written communication issued by the Owner to the Contractor authorizing him to proceed with the Work and establishing the date of commencement of the Work. (Ref: AIA Document A201 and Handbook Chapters 17 and 18.)

O

OBSERVATION OF THE WORK: A function of the Architect in the Construction Phase, during his periodic visits to the site, to familiarize himself generally with the progress and quality of the Work and to determine in general if the Work is proceeding in accordance with the Contract Documents. See also **CONSTRUCTION PHASE - ADMINISTRATION OF THE CONSTRUCTION CONTRACT.** (Ref: AIA Documents A201, B131, B231 and B331 and Handbook Chapters 18 and 19.)

OCCUPANCY PERMIT: See **CERTIFICATE OF OCCUPANCY.**

OCCURRENCE (insurance terminology): An accident or a continuous exposure to conditions which result in injury or damage, provided the injury or damage is neither expected nor intended.

OPENING OF BIDS: See **BID OPENING.**

OPTION (CONTRACTOR'S): See **CONTRACTOR'S OPTION.**

OR EQUAL: See **APPROVED EQUAL.**

OUT-OF-SEQUENCE SERVICES: Services performed in other than the normal or natural order of succession. (Ref: AIA Documents B131, B231, B331, C131, C231 and C331.)

OVERHEAD EXPENSE: See **INDIRECT EXPENSE.**

OWNER: (1) The Architect's client and party to the Owner-Architect Agreement. (2) The Owner of the Project and party to the Owner-Contractor Agreement.

OWNER-ARCHITECT AGREEMENT: Contract between Architect and client for professional services. (Ref: AIA Documents B131, B231 and B331 and Handbook Chapter 9.)

OWNER-CONTRACTOR AGREEMENT: Contract between Owner and Contractor for a construction Project. (Ref: AIA Documents. A101, A107 and A111 and Handbook Chapter 17.)

OWNER'S INSPECTOR: A person employed by the Owner to inspect construction in the Owner's behalf.

OWNER'S LIABILITY INSURANCE: Insurance to protect the Owner against claims arising from his ownership of property and which may be extended to cover claims which may arise from operations of others under the Construction Contract. (Ref: Handbook Chapter 7.)

P

PACKAGE DEALER: A person or organization assuming responsibility under a single contract for the design and construction of a Project to meet the specific requirements of another. (Ref: Handbook Chapter 2.)

PARAGRAPH: In the AIA Documents, the first subdivision of an Article, identified by two numerals - e.g., 2.2. A paragraph may be further subdivided into subparagraphs and clauses. (Ref: Handbook Chapter 14.)

PARTIAL OCCUPANCY: Occupancy by the Owner of a portion of a Project prior to final completion. (Ref: Handbook Chapter 18.)

PARTIAL PAYMENT: See **PROGRESS PAYMENT.**

PAYMENT BOND: See **LABOR AND MATERIAL PAYMENT BOND.**

PAYMENT REQUEST: See **APPLICATION FOR PAYMENT.**

PENAL SUM: The amount named in a contract or bond as the penalty to be paid by a signatory thereto in the event he fails to perform his contractual obligations.

PENALTY AND BONUS CLAUSE: See **BONUS AND PENALTY CLAUSE.**

PERCENTAGE AGREEMENT: An agreement for professional services in which the compensation is based upon a percentage of the Construction Cost. (Ref: AIA Documents B131 and C131.)

PERCENTAGE FEE: Compensation based upon a percentage of Construction Cost. See also **FEE.**

PERFORMANCE BOND: A bond of the Contractor in which a surety guarantees to the Owner that the Work will be performed in accordance with the Contract Documents. Except where prohibited by statute, the Performance Bond is frequently combined with the Labor and Material Payment Bond. See also **SURETY BOND.** (Ref: AIA Document A311 and Handbook Chapter 7.)

PERMIT, BUILDING: See **BUILDING PERMIT.**

PERMIT, OCCUPANCY: See **CERTIFICATE OF OCCUPANCY.**

PERMIT, ZONING: See **ZONING PERMIT.**

PERSONAL INJURY (insurance terminology): Injury or damage to the character or reputation of a person, as well as bodily injury. Personal injury insurance usually covers such situations as false arrest, malicious prosecution, willful detention or imprisonment, libel, slander, defamation of character, wrongful eviction, invasion of privacy or wrongful entry. See also **BODILY INJURY.**

PERSPECTIVE DRAWING: A graphic representation of the Project or part thereof as it would appear three-dimensionally.

PERT SCHEDULE: An acronym for Project Evaluation Review Technique. The Pert Schedule charts the activities and events anticipated in a work process. See also **CRITICAL PATH METHOD (CPM).**

PLAN: A two-dimensional graphic representation of the design, location and dimensions of the Project, or parts thereof, seen in a horizontal plane viewed from above. See also **DRAWINGS.** (Ref: Handbook Chapter 12.)

PLAN DEPOSIT: See **DEPOSIT FOR BIDDING DOCUMENTS.**

POST-COMPLETION SERVICES: Additional services rendered after issuance of the final Certificate for Payment, such as consultation regarding maintenance, processes, systems, etc.

POWER OF ATTORNEY: An instrument authorizing another to act as one's agent. See also **ATTORNEY IN FACT.**

PRELIMINARY DRAWINGS: Drawings prepared during the early stages of the design of a Project. See also (1) **SCHEMATIC DESIGN PHASE;** (2) **DESIGN DEVELOPMENT PHASE.** (Ref: AIA Documents B131, B231, B331, C131, C231 and C331.)

PRELIMINARY ESTIMATE: See **STATEMENT OF PROBABLE CONSTRUCTION COST.**

PREQUALIFICATION OF PROSPECTIVE BIDDERS: The process of investigating the qualifications of prospective bidders on the basis of their competence, integrity and responsibility relative to the contemplated Project. (Ref: AIA Document A305 and Handbook Chapter 16.)

PRIME CONTRACT: Contract between Owner and Contractor for construction of a Project or portion thereof.

PRIME CONTRACTOR: Any contractor on a Project having a contract directly with the Owner.

PRIME PROFESSIONAL: Any person or firm having a contract directly with the Owner for professional services.

PRINCIPAL (in professional practice): Any person legally responsible for the activities of a professional practice.

PRODUCER: Manufacturer, processor or assembler of building materials or equipment.

PROFESSIONAL ADVISOR: An Architect engaged by the Owner to direct an authorized design competition for the selection of an Architect. (Ref: AIA Document B451.)

PROFESSIONAL ENGINEER: Designation reserved, usually by law, for a person or organization professionally qualified and duly licensed to perform such engineering services as structural, mechanical, electrical, sanitary, civil, etc. (Ref: Handbook Chapter 10.)

PROFESSIONAL FEE: See **COST PLUS FEE AGREEMENT.**

PROFESSIONAL LIABILITY INSURANCE: Insurance designed to insure an Architect or Engineer against claims for damages resulting from alleged professional negligence. (Ref: Handbook Chapters 7 and 19.)

PROFESSIONAL PRACTICE: The practice of one of the environmental design professions in which services are rendered within the framework of recognized professional ethics and standards and applicable legal requirements. (Ref: AIA Document J330.)

PROGRAM: A written statement setting forth in detail the conditions and requirements for a Project.

PROGRESS PAYMENT: Partial payment made during progress of the Work on account of work completed and/or materials suitably stored. (Ref: AIA Documents A101, A107, A111, A201, B131, B231, B331, C131, C231 and C331.)

PROGRESS SCHEDULE: A diagram, graph or other pictorial or written schedule showing proposed and actual times of starting and completion of the various elements of the Work. See also (1) **CRITICAL PATH METHOD (CPM);** (2) **PERT SCHEDULE.** (Ref: AIA Document A201 and Handbook Chapter 18.)

PROJECT: The total construction designed by the Architect, of which the Work performed under the Contract Documents may be the whole or a part. (Ref: AIA Document A201.)

PROJECT COST: Total cost of the Project including professional compensation, land costs, furnishings and equipment, financing and other charges, as well as the Construction Cost.

PROJECT MANUAL: The manual prepared by the Architect for a Project, including the bidding requirements, Conditions of the Contract and the technical Specifications. (Ref: Handbook Chapter 14.)

PROJECT REPRESENTATIVE: The Architect's representative at the Project site who assists in the Administration of the Construction Contract. When authorized by the Owner, a Full-Time Project Representative may be employed. (Ref: AIA Documents B131, B231, B331 and B352.)

PROJECT SITE: See **SITE.**

PROPERTY DAMAGE INSURANCE: Part of general liability insurance covering injury to or destruction of tan-

gible property, including loss of use resulting therefrom, but usually not including property which is in the care, custody and control of the insured. See also **CARE, CUSTODY AND CONTROL.** (Ref: AIA Document A201 and Handbook Chapter 7.)

PROPERTY INSURANCE: Insurance on the Work at the site against loss or damage caused by perils of fire, lightning, extended coverage (wind, hail, explosion, except steam boiler explosion, riot, civil commotion, aircraft, land vehicles and smoke), vandalism and malicious mischief and additional perils (as otherwise provided or requested). See also **SPECIAL HAZARDS INSURANCE.** (Ref: AIA Document A201 and Handbook Chapter 7.)

PROPOSAL (CONTRACTOR'S): See **BID.**

PROPOSAL FORM: See **BID FORM.**

PUBLIC LIABILITY INSURANCE: Insurance covering liability of the insured for negligent acts resulting in bodily injury, disease or death of others than employees of the insured, and/or property damage. (Ref: Handbook Chapter 7.)

PUNCH LIST: Use **INSPECTION LIST.**

Q

QUANTITY SURVEY: Detailed analysis and listing of all items of material and equipment necessary to construct a Project. (Ref: Handbook Chapter 15.)

QUOTATION: A price quoted by a contractor, subcontractor, material supplier or vendor to furnish materials, labor or both.

R

REASONABLE CARE AND SKILL: See **DUE CARE.**

RECORD DRAWINGS: Construction drawings revised to show significant changes made during the construction process, usually based on marked-up prints, drawings and other data furnished by the Contractor to the Architect.

REGISTERED ARCHITECT: See **ARCHITECT.**

REIMBURSABLE EXPENSES: Amounts expended for or on account of the Project which, in accordance with the terms of the appropriate agreement, are to be reimbursed by the Owner. (Ref: AIA Documents A111, B131, B231, B331, C131, C231 and C331.)

RELEASE OF LIEN: Instrument executed by one supplying labor, materials or professional services on a Project which releases his mechanic's lien against the Project property. See also **MECHANIC'S LIEN.** (Ref: AIA Document G706A and Handbook Chapter 18.)

REMODELING: See **ALTERATIONS.**

RENDERING: A perspective or elevation drawing of a Project or portion thereof with an artistic delineation of materials, shades and shadows.

RESIDENT ENGINEER: A person representing the Owner's interests at the Project site during the Construction Phase; term frequently used on Projects in which a governmental agency is involved. See also **OWNER'S INSPECTOR.**

RESIDENT INSPECTOR: See (1) **OWNER'S INSPECTOR;** (2) **RESIDENT ENGINEER.**

RESPONSIBLE BIDDER: See **LOWEST RESPONSIBLE BIDDER.**

RESPONSIVE BID: See **LOWEST RESPONSIVE BID.**

RESTRICTED LIST OF BIDDERS: See **INVITED BIDDERS.**

RETAINAGE: A sum withheld from progress payments to the Contractor in accordance with the terms of the Owner-Contractor Agreement. (Ref: AIA Documents A101, A107, A111 and A201 and Handbook Chapter 18.)

RETAINED PERCENTAGE: See **RETAINAGE.**

S

SAMPLES: Physical examples furnished by the Contractor for the Architect's review and approval, which illustrate materials, equipment or workmanship, and which establish standards by which the Work will be judged. (Ref: AIA Document A201.)

SCHEDULE OF VALUES: A statement furnished by the Contractor to the Architect reflecting the portions of the Contract Sum allotted for the various parts of the Work and used as the basis for reviewing the Contractor's applications for progress payments. (Ref: AIA Documents A201 and G702 and Handbook Chapter 18.)

SCHEMATIC DESIGN PHASE: The first Phase of the Architect's Basic Services. In this Phase, the Architect consults with the Owner to ascertain the requirements of the Project and prepares Schematic Design studies consisting of drawings and other documents illustrating the scale and relationship of the Project components for approval by the Owner. The Architect also submits to the Owner a Statement of Probable Construction Cost. (Ref: AIA Documents B131, B231 and B331 and Handbook Chapters 9 and 11.)

SEAL: (1) A device usually consisting of an impression upon wax or paper, or a wafer, which is used in the execution of a formal legal document such as a deed or contract. The statute of limitations applicable to a contract under seal is ordinarily substantially longer than to a contract not under seal. (2) An embossing device or stamp used by a design professional on his Drawings and Specifications as evidence of his registration in the state where the Work is to be performed. (Ref: Handbook Chapter 19.)

SECTION (drawing): A drawing of a surface revealed by an imaginary plane cut through the Project, or portion thereof, in such a manner as to show the composition of the surface as it would appear if the part intervening

between the cut plane and the eye of the observer were removed. (Ref: Handbook Chapter 12.)

SECTION (of Specifications): A subdivision of a Division of the Specifications which should cover the Work of no more than one trade. (Ref: AIA Document K103 and Handbook Chapter 14.)

SELECTED BIDDER: The bidder selected by the Owner for discussions relative to the possible award of the Construction Contract.

SELECTED LIST OF BIDDERS: See **INVITED BIDDERS.**

SEPARATE CONTRACT: One of several prime contracts on a construction Project. (Ref: Handbook Chapter 16.)

SHOP DRAWINGS: Drawings, diagrams, illustrations, schedules, performance charts, brochures and other data prepared by the Contractor or any Subcontractor, manufacturer, supplier or distributor, which illustrate how specific portions of the Work shall be fabricated and/or installed. (Ref: AIA Document A201 and Handbook Chapter 18.)

SINGLE CONTRACT: Contract for construction of a Project under which a single prime Contractor is responsible for all of the Work. (Ref: Handbook Chapter 16.)

SITE: Geographical location of the Project, usually defined by legal boundary lines.

SOIL SURVEY: Use **SUBSURFACE INVESTIGATION.**

SPECIAL CONDITIONS: A section of the Conditions of the Contract, other than General Conditions and Supplementary Conditions, which may be prepared for a particular Project. See also **CONDITIONS OF THE CONTRACT.**

SPECIAL HAZARDS INSURANCE: Additional perils insurance to be included in Property Insurance (as provided in Contract Documents or requested by Contractor or at option of Owner) such as sprinkler leakage, collapse, water damage, all physical loss, or insurance on materials and supplies at other locations and/or in transit to the site. See also **PROPERTY INSURANCE.** (Ref: AIA Document A201 and Handbook Chapter 7.)

SPECIFICATIONS: A part of the Contract Documents contained in the Project Manual consisting of written descriptions of a technical nature of materials, equipment construction systems, standards and workmanship. Under the Uniform System, the Specifications comprise sixteen Divisions. (Ref: AIA Document K103 and Handbook Chapter 14.)

SPECULATIVE BUILDER: One who develops and constructs building projects for subsequent sale or lease.

STANDARDS OF PROFESSIONAL PRACTICE: Statements of ethical principles promulgated by professional societies to guide their members in the conduct of professional practice. (Ref: AIA Document J330.)

STATEMENT OF PROBABLE CONSTRUCTION COST: Cost forecasts prepared by the Architect during the Schematic Design, Design Development and Construction Documents Phases of Basic Services for the guidance of the Owner. (Ref: AIA Documents B131, B231, B331, C131, C231 and C331 and Handbook Chapter 15.)

STATUTE OF LIMITATIONS: A statute specifying the period of time within which legal action must be brought for alleged damage or injury. The lengths of the periods vary from state to state and depend upon the type of legal action. Ordinarily the period commences with the discovery of the act resulting in the alleged damage or injury, although in construction industry cases a number of jurisdictions define the period as commencing with completion of the Work or services performed in connection therewith.

STATUTORY BOND: A bond, the form or content of which is prescribed by statute. (Ref: Handbook Chapter 7.)

STEAM BOILER AND MACHINERY INSURANCE: Special insurance covering steam boilers, other pressure vessels and related equipment and machinery. This insurance covers damage or injury to property resulting from explosion of steam boilers which is not covered by extended coverage perils.

STIPULATED SUM AGREEMENT: Contract in which a specific amount is set forth as the total payment for performance of the Contract. (Ref: AIA Documents A101 and A107.)

STREAMLINED SPECIFICATIONS: Specifications containing adequate technical information for the construction of the Work but written in an abbreviated manner.

STUDY: Preliminary sketch or drawing to facilitate the development of a design.

SUB-BIDDER: One who tenders to a bidder on a prime Contract a proposal to provide materials and/or labor.

SUBCONTRACT: Agreement between a prime Contractor and a Subcontractor for a portion of the Work at the site. (Ref: AIA Document A401 and Handbook Chapter 17.)

SUBCONTRACTOR: A person or organization who has a direct Contract with a prime Contractor to perform a portion of the Work at the site. Cf. **SUPPLIER.** (Ref: AIA Document A201 and A401 and Handbook Chapter 17.)

SUBHEADING: A subdivision of a Heading used in the Filing System (Part Two of the Uniform System). (Ref: AIA Document K103.)

SUBPARAGRAPH: In the AIA Documents, the first subdivision of a Paragraph, identified by three numerals — e.g. 2.2.2. A subparagraph may be subdivided into clauses.

SUBROGATION: The substitution of one person for another with respect to legal rights such as a right of recovery. Subrogation occurs when a third person, such as an insurance company, has paid a debt of another or claim against another and succeeds to all legal rights which the debtor or person against whom the claim was asserted may have against other persons.

SUBSTANTIAL COMPLETION: See **DATE OF SUBSTANTIAL COMPLETION.**

SUBSTITUTION: A material or process offered in lieu of and as being equivalent to a specified material or process.

SUB-SUBCONTRACTOR: A person or organization who has a direct or indirect Contract with a Subcontractor to perform a portion of the Work at the site.

SUBSURFACE INVESTIGATION: The soil boring and sampling program, together with the associated laboratory tests, necessary to establish subsurface profiles and the relative strengths, compressibility and other characteristics of the various strata encountered within the depths likely to have an influence on the design of the Project.

SUCCESSFUL BIDDER: Use **SELECTED BIDDER.**

SUPERINTENDENT: Contractor's representative at the site who is responsible for continuous field supervision, coordination, completion of the Work and, unless another person is designated in writing by the Contractor to the Owner and the Architect, for the prevention of accidents. (Ref: AIA Document A201.)

SUPERVISION: Direction of the Work by Contractor's personnel. Supervision is neither a duty nor a responsibility of the Architect as part of his basic professional services.

SUPPLEMENTAL CONDITIONS: Use **SUPPLEMENTARY CONDITIONS.**

SUPPLEMENTARY CONDITIONS: A part of the Contract Documents which supplements and may also modify provisions of the General Conditions. See also **CONDITIONS OF THE CONTRACT.** (Ref: Handbook Chapter 13.)

SUPPLIER: A person or organization who supplies materials or equipment for the Work, including that fabricated to a special design, but who does not perform labor at the site. See also **VENDOR.**

SURETY: A person or organization who, for a consideration, promises in writing to make good the debt or default of another. (Ref: Handbook Chapter 7.)

SURETY BOND: A legal instrument under which one party agrees to answer to another party for the debt, default or failure to perform of a third party. (Ref: Handbook Chapter 7.)

SURVEY: (1) Boundary and/or topographic mapping of a site. (2) Measuring an existing building. (3) Analyzing a building for use of space. (4) Determining Owner's requirements for a Project. (5) Investigating and reporting of required data for a Project.

SYSTEMS (a process): Combining prefabricated assemblies, components and parts into single integrated units utilizing industrialized production, assembly and methods.

T

TERMINAL EXPENSES: Expenses incurred in connection with the termination of a contract. (Ref: AIA Documents B131, B231, B331, C131, C231 and C331.)

TIME (as the essence of the Construction Contract): Time limits or periods stated in the Contract. A provision in a Construction Contract that "time is of the essence of the Contract" signifies that the parties consider that punctual performance within the time limits or periods in the Contract is a vital part of the performance and that failure to perform on time is a breach for which the injured party is entitled to damages in the amount of loss sustained.

TIME OF COMPLETION: Date established in the Contract, by name or by number of days, for Substantial Completion of the Work. See also (1) **COMPLETION DATE;** (2) **CONTRACT TIME.**

TIMELY COMPLETION: Completion of the Work or designated portion thereof on or before the date required.

TOPOGRAPHIC SURVEY: The configuration of a surface including its relief and the locations of its natural and man-made features, usually recorded on a drawing showing surface variations by means of contour lines indicating height above or below a fixed datum.

TRADE (CRAFT): (1) Occupation requiring manual skill. (2) Members of a trade organized into a collective body.

U

UNIFORM SYSTEM: Coordination of Specification sections, filing of technical data and product literature, and construction cost accounting organized in 16 Divisions based on an interrelationship of place, trade, function or material. (Ref: AIA Document K103.)

UNIT PRICES: Amounts stated in a Contract as prices per unit of measurement for materials or services as described in the Contract Documents.

UPSET PRICE: See **GUARANTEED MAXIMUM COST.**

V

VENDOR: A person or organization who furnishes materials or equipment not fabricated to a special design for the Work. See also **SUPPLIER.**

VOLUME METHOD (of estimating cost): Method of estimating probable total construction cost by multiplying the adjusted gross building volume by a predetermined cost per unit of volume. (Ref: AIA Document D101 and Handbook Chapter 15.)

W

WAIVER OF LIEN: An instrument by which a person or organization who has or may have a right of mechanic's

lien against the property of another relinquishes such right. See also (1) **MECHANIC'S LIEN;** (2) **RELEASE OF LIEN.**

WARRANTY: See **GUARANTEE.**

WITNESS: See **EXPERT WITNESS.**

WORK: All labor necessary to produce the construction required by the Contract Documents, and all materials and equipment incorporated or to be incorporated in such construction.

WORK ORDER: Use **NOTICE TO PROCEED.**

WORKING DRAWINGS: See **DRAWINGS.**

WORKMEN'S COMPENSATION INSURANCE: Insurance covering liability of an employer to his employees for compensation and other benefits required by workmen's compensation laws with respect to injury, sickness, disease or death arising from their employment.

X

XCU (insurance terminology): Letters which refer to exclusions from coverage for property damage liability arising out of (1) explosion or blasting, (2) collapse of or structural damage to any building or structure, and (3) underground damage caused by and occurring during the use of mechanical equipment.

Z

ZONING PERMIT: A permit issued by appropriate governmental authority authorizing land to be used for a specific purpose.

GLOSSARY REFERENCES

References in this Glossary generally refer to publications and document published by The American Institute of Architects. The following is a listing of these documents as found in the AIA *Architect's Handbook of Professional Practice* or otherwise available from the Institute.

Handbook Chapter 1 The AIA Handbook
Handbook Chapter 2 The Construction Industry
Handbook Chapter 3 AIA and Related Organizations
Handbook Chapter 4 Careers in Architecture
Handbook Chapter 5 Selection of the Architect
Handbook Chapter 6 The Architectural Office
Handbook Chapter 7 Insurance and Bonds of Suretyship
Handbook Chapter 8 The Architect and the Public
Handbook Chapter 9 Owner-Architect Agreements
Handbook Chapter 10 The Architect and His Consultants
Handbook Chapter 11 Project Procedures
Handbook Chapter 12 Construction Documents — Drawings
Handbook Chapter 13 General Conditions of the Contract for Construction
Handbook Chapter 14 Specifications
Handbook Chapter 15 Construction Cost Analysis
Handbook Chapter 16 Selection of Contractors
Handbook Chapter 17 Owner-Contractor and Contractor-Subcontractor Agreements
Handbook Chapter 18 Construction Contract Administration
Handbook Chapter 19 Legal Concerns
Handbook Chapter 20 Comprehensive Services
A101 Owner-Contractor Agreement Form — Stipulated Sum
A105 Jacket for Standard Documents
A107 Owner-Contractor Agreement Form — Stipulated Sum (Small Construction Contracts)
A111 Owner-Contractor Agreement Form — Cost Plus a Fee
A201 General Conditions of the Contract for Construction
A201/SC Supplementary Conditions of the Contract for Construction — Federal Edition
A305 Contractor's Qualification Statement
A310 Bid Bond
A311 Performance Bond and Labor and Material Payment Bond
A401 Contractor-Subcontractor Agreement Form
A501 Recommended Guide to Bidding Procedures
A701 Instructions to Bidders
B131 Owner-Architect Agreement Form — Percentage
B231 Owner-Architect Agreement Form — Multiple of Direct Expense
B331 Owner-Architect Agreement Form — Professional Fee Plus Expenses
B352 Duties, Responsibilities and Limitations of Authority of Full-Time Project Representative
B440 Comprehensive Architectural Services
B551 Statement of Professional Services
C131 Architect-Engineer Agreement Form — Percentage
C231 Architect-Engineer Agreement Form — Multiple of Direct Expense
C331 Architect-Engineer Agreement Form — Professional Fee Plus Expenses
D101 Architectural Area and Volume of Buildings
G701 Change Order
G702 Application for Payment
G702A Continuation Sheet for G702
G703 Certificate for Payment
G704 Certificate of Substantial Completion
G705 Certificate of Insurance
G706 Contractor's Affidavit of Payment of Debts and Claims
G706A Contractor's Affidavit of Release of Liens
G707 Consent of Surety Company to Final Payment
G708 Architect's Field Order
G709 Proposal Request
G801 Application for Employment
G802 Invoice for Architectural Service
G804 Bid Document Register
G805 List of Subcontractors
G807 Project Directory
G809 Project Data
G810 Transmittal Letter
J330 Standards of Ethical Practice
K103 Uniform System for Construction Specifications, Data Filing and Cost Accounting

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